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GROWTH AND THE BALANCE OF PAYMENTS: A SYMPOSIUM

EDITORIAL NOTE

In the BULLETIN for May and June, 1954, *we published an article ' Retrospect and Prospect : The Economic Survey* 1954 *' by P. D. Henderson. In the third section of that article, the author set down his views on some of the more important longer-term problems facing the British economy. As the issues raised seemed to be of sufficient theoretical and practical interest to warrant further discussion, we invited a number of economists to submit their comments. These comments, together with a reply by Mr. Henderson, are printed in this Symposium. For the convenience of readers, we introduce the Symposium with an outline of some of the main arguments which were advanced in the original article. All bracketed page references in the text are to the May-June* 1954 *BULLETIN, which should be consulted for details of Mr. Henderson's arguments.*

Consider first an expansion in the sense of a long-term growth in output and productivity. There is no reason to suppose that the increase in import volume as output and real incomes increase will lead to an equivalent increase in export volume, and it is unduly optimistic to rely on favourable price-effects to redress the balance. But the dynamic forces operating in a growing economy might throw up new products and new industries conferring substantial competitive advantages. In any case, the possibility of a conflict between growth and solvency does not justify an attempt to ' solve ' the balance of payments problem by slowing down the rate of growth. The prime object of policy should be to promote a high rate of growth, and to find some means of remaining solvent.

Take now an expansion in the short-run sense of a particular increase in home demand. There may be a real conflict between home and foreign demands on our productive capacity, and consequently a risk that exports will fall off or fail to increase at a sufficiently rapid rate. But it is an error to identify this danger with the danger of inflation, and to suppose that it could be countered by appropriate measures of disinflation. Here again, a more ‘ expansionist ’ solution is desirable. A reduction in demand may help to increase the supply of goods which can be exported; but it would be preferable to achieve this object by expanding productive capacity in the export trades, and in the industries on which they depend.

Since an increase—possibly a substantial increase—in the rate of industrial investment will probably be necessary not only to make a satisfactory rate of long-term growth possible, but also to provide for a more rapid expansion of productive capacity in many industries, ways and means of stimulating investment must be examined. As shortage of finance does not at present appear to be curtailing investment, it is misguided to advocate higher savings as a means to higher investment. Similarly, measures such as lower interest rates, and lower taxation of undistributed profits, which ease the financing of investment are also unlikely to lead to significant increases. More direct stimuli are necessary : and if the results of the present policy of investment allowances are disappointing, more radical schemes of tax remission for investment expenditures should be considered.

ECONOMIC EXPANSION AND THE BALANCE OF PAYMENTS

By Harry G. Johnson.

Mr. Henderson's remarks on the problems of economic growth in the British economy are provocative and superficially convincing; but on closer investigation his argument seems to depend on two assumptions—that a high rate of growth is automatically desirable, and that it is to be achieved by stimulating industrial investment—which are by no means as axiomatic as he assumes, and which cause him at various points to disregard the logical implications of his own analysis.

Following Mr. Henderson's procedure, these comments will commence with a theoretical investigation of the effects of increasing productivity on a country's international trade position (what Mr. Henderson terms ' the long-run problem '); some reference will also be made to his arguments on ' the short-run problem ' of inflation and the balance of payments, but the question of how to promote a high rate of investment will be left to other commentators. Instead, an attempt will be made to draw some of the results of the theoretical analysis together in a discussion of the implications of Britain's long-run prospects for growth policy.

(*a*) *The Long-run Problem*

Mr. Henderson concludes, rather plausibly,[1] that increasing productivity is likely to have an unfavourable effect on the balance of payments, and that in a growing world economy this country might gain, balance-of-payments-wise, from having a relatively low rate of growth. But he asserts that the possible conflict between expansion and solvency should be resolved in favour of the former, that ' the aim of economic policy should be to promote a high rate of growth, and to find some means of remaining solvent which is consistent with this ' (p. 164).

In posing the problem of the effects of growth on a country's international economic relations in terms of the effects on its balance of payments, however, Mr. Henderson implicitly makes a number of assumptions which both obscure the basic nature of the policy problem and leave the real economic problems unanalysed. In order to obtain the kind of theoretical conclusions stated in the previous paragraph, it is necessary to assume both that the monetary authorities maintain fixed exchange rates, and that they pursue whatever fiscal and monetary policies are required to guarantee full employment at whatever wage-price level is set by the economy. Statement of these assumptions shows that the problem is not basically one of a conflict between expansion and solvency, but of a conflict between the maintenance of full employment and the maintenance of fixed exchange rates. This is a quite familiar conflict, and the choice of expansion requires a clear choice between trade and exchange restrictions, exchange depreciation, and (possibly) continued distress borrowing from abroad. Mr. Henderson's vague phrase about finding ' some means of remaining solvent ' implies, if it implies anything, a choice in favour of the first alternative, which in turn implies the view that the prestige of sterling is worth preserving at the expense of a progressive sacrifice of the advantages of liberal trading policies.[1] This is a view which at the very least requires explicit defence, particularly against the arguments for a flexible exchange rate.

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[1] His argument that price effects are unlikely to outweigh the income effect is reinforced by the consideration that insofar as increasing productivity is due to capital accumulation rather than technical progress it may have little or no effect in reducing unit costs at constant wage rates.

The basic policy problem arising from economic expansion is whether fixed exchange rates are consistent with British economic structure and policy objectives, and not, as Mr. Henderson believes, whether expansion will threaten solvency. More important still is the fact that Mr. Henderson's concentration on the tendencies to international *monetary* disequilibrium inherent in the combination of full employment and fixed exchange rates leads him to overlook the possibility of *real* problems of international adjustment to growth in one country, problems which may seriously qualify the desirability he attaches, without examination, to a high rate of increase of productivity in the British economy, and also the emphasis he places on increasing industrial productivity. In order to investigate this aspect of the problem it is assumed that the balance of payments is kept in balance by whatever adjustment of the exchange rate or internal price level is required.[2]

The essential difficulty arises from the fact that in any economy heavily dependent on imports, increasing productivity and increasing real income are not synonymous : production is transformed into consumption partly through international trade, and unless exports can be expanded without worsening the terms of trade, an increase in productivity will lead to a less than proportionate increase in real income. If the price-elasticities of demand for exports and imports are relatively low, the gain in real income from an increase in productivity may be relatively small; and if the price-elasticities decrease as the terms of trade turn against the country, there will be a definite limit to the increase in real income attainable by increasing productivity. In the context of a growing world economy, the inference is that a country may increase its rate of growth of real income very little through an increase in the rate of growth of its productivity relative to the rest of the world, and that the process of increasing the rate of growth of real income through increasing the rate of growth of productivity may be subject to rapidly diminishing returns. In certain circumstances a country might gain, in terms of the rate of growth of its real income, by having a relatively low rate of growth of productivity, and lose by having a high one.[1]

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[1] This interpretation is supported by Mr. Henderson's rejection of the argument for flexible rates as raising objections too obvious to required discussion (p. 167 fn. 4). Mr. Henderson's unquestioning acceptance of a fixed exchange rate may, of course, conceal the more rational (though in the writer's opinion untenable) view that maintenance of a fixed rate, by creating chronic balance-of-payments problems, makes it easier to extract subsidies from the dollar area and favourable commercial policies from the sterling area.

[2] The alternative of changes in the degree of import restriction is excluded ; progressive tightening of import restrictions as an alternative to secular depreciation (say) would seem in any case impracticable.

This argument rests on extremely simple assumptions, and its applicability to the British situation may be improved by relaxing these and considering a more complex model of international trade.

In the first place, the argument assumes that the rest of the world can be treated as a homogeneous unit. More realistically, the world could be conceived of as divided into manufacturing and primary producing countries, with the trend of the terms of trade between manufactures and primaries determined by the relative rates of growth of production in the two sectors. The effects of variation in the rate of growth of productivity in one manufacturing country then becomes a problem in the economics of imperfect competition. A higher rate of growth of output in one manufacturing country would tend to turn the terms of trade against all, to an extent depending on the country's share in world trade and the elasticity of world demand for manufactures; and also against itself relatively more than against the others, depending on the extent to which its particular ranges of exports and imports were substitutable for the exports and imports of other countries in world consumption. For a small country with non-specialized manufacturing output and import requirements, the terms of trade would be negligibly affected by the rate of growth of productivity; the rate of growth of real income would depend on both the rate of growth of productivity in the country and the trend of the terms of trade between manufactures and primaries, and if the latter were adverse a minimum rate of increase in productivity would be required to avoid a deterioration in real income. For a relatively large trading country, on the other hand, the rate of growth of productivity might significantly influence both the trend of the terms of trade between primaries and manufactures and the trend of its own terms of trade relatively to the general trend. Finally, a country might be in a situation somewhat analogous to the ' oligopoly kink ' : below a certain rate of growth of output its terms of trade might be closely tied to the world trend, and above that rate of growth its terms of trade might deteriorate rapidly relatively to the world trend. These conditions would imply a discontinuity, perhaps even a peak, in the rate of increase of real income obtainable by increasing productivity; if the trend of the terms of trade between manufactures and primaries were adverse, the country would be doomed to a low rate of increase of real income, whatever its rate of increase in productivity, and it might even do better with a low rate of increase of productivity than a high one. This may well be a reasonable approximation to the long-run prospects of the British economy : above a certain rate of growth, the adverse movement of the terms of trade required to maintain or expand the British share in the world manufacturing market might be so great that most of the benefit from increasing productivity accrued to other countries.

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[1] Such a loss would occur if the increase in output were more than offset by an adverse movement of the terms of trade, resulting from increasing productivity. It could be avoided if the country acted as a monopolist in international trade *and* its imports were consumption goods ; but it might not be avoidable if imports consisted mainly of production materials, so that growth necessitated an expansion of imports.

Secondly, the argument assumes that the country's output is homogeneous and the increase in productivity evenly spread. If the economy is differentiated into exporting, non-competing, and import-competing sectors, it is clear that insofar as the effect of a general increase in productivity would be to produce an unfavourable movement of the terms of trade, an increase in productivity in the export sector would be less advantageous, and an increase in productivity in the import-competing sector more advantageous, than a general increase, because of their contrasting effects on the terms of trade. A country large enough for its growth to influence its terms of trade could therefore raise its real income more rapidly by encouraging increasing productivity in import-substitute sectors more than elsewhere.[1] Whether the country could influence its terms of trade or not it could gain by encouraging increasing productivity more in export or in import-competing sectors, according to whether the long-run trend of its terms of trade was favourable or adverse.[2]

Thirdly, the argument assumes that increasing productivity in domestic production is the only means by which a country can achieve a rising level of real income: it excludes, that is, the possibility of raising real income by foreign investment. If a country's terms of trade are influenced by its rate of growth relative to other countries, investment abroad may raise real income more than would investment at home at the same current rate of return, through increasing the supply of foreign goods relative to home goods and so promoting a favourable movement of the terms of trade. Similarly, if the trend of the terms of trade (as determined by growth elsewhere) is adverse, the country can gain more by investing abroad than by investing at home, and *vice versa*. Foreign investment and investment in import-competing industries are, on this highly simplified level of analysis, alternative ways of achieving the same result.[3]

As Mr. Henderson points out, the foregoing type of analysis implicitly views economic growth essentially as the production of more and more of the same sort of goods, and may be largely irrelevant if growth takes the form of producing new and improved types of goods. However, for many purposes of economic analysis quality changes (including new goods as an extreme case) can be treated analogously with price or quantity changes, and on this assumption the conclusions arrived at above may extend more broadly than appears at first sight.[1]

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[1] Some degree of import-substitution would follow automatically on increases in productivity, either generally or in the non-competing and export sectors, if resources were mobile and investment followed the profit motive. But such import-substitution would distribute resources according to the relative prices of imports and other goods, whereas what would be required would be distribution according to the marginal costs of imports and other goods to the economy. It should perhaps be emphasized that neither this nor the following point provide an argument for exclusive concentration on import-substitution, since the relative costs of increasing productivity in the different sectors must be considered.

[2] This assumes that the government has more economic foresight than the market mechanism, or that the latter is not allowed to operate freely.

[3] The conclusions just stated are subject to the same sort of qualification as those mentioned in the previous two footnotes. Insofar as investment raises real wages, the increase in real income from home investment will exceed the rate of return on capital, and investment at home would be more advantageous than investment abroad at the same rate of return, ignoring the terms-of-trade effects.

(*b*) *The Short-Run Problem and the Problem of Capacity*

In discussing these problems Mr. Henderson puts two unexceptionable propositions : that, as the British economy is at present constituted, moderate increases in effective demand are unlikely to touch off wild inflation, and that the rate of increase of wages and prices is unlikely to be significantly affected by moderate changes in demand. His assessment of the effects of inflation on the balance of payments, however, is rather less acceptable, both because he considers only the effects on exports, ignoring the parallel effects on imports (which have been much the more important problem in recent years), and because he seems to envisage the export problem entirely in terms of expanding production of existing export goods by established export firms.[2]

This latter view finds expression in some rather surprising arguments. Mr. Henderson dismisses as not ' sensible ' the case for deflating demand in order to free current production for export, recommending instead an expansion of capacity which under the postulated conditions of general inflation would require deflation of demand elsewhere to bring about; and he is prepared to recommend deflation of demand as a means of increasing capacity in the export industries when an increase in foreign demand for exports is anticipated. In both cases he apparently assumes that it is preferable to reduce home demand for everything else rather than exportable goods, and that the adjustment which is likely to take longest and be most difficult to reverse (transfer of productive resources) is invariably the most economic.

This one-sided view of the relative efficiency of the two methods by which exports may be expanded in the short run is closely associated with Mr. Henderson's emphasis on the need for adequate excess capacity in the export trades, and its limitations suggest some objections to his solution of the short run balance-of-payments problem. There are many different ways in which the economy may be cushioned against a sudden rise in import prices —temporary reduction of consumption of imports and exportable goods, running down of stocks of imported or exportable goods, running down of gold reserves—other than by the utilization of excess capacity in exporting industries; and reliance on almost any one of them would be more efficient, in the sense of requiring less capital investment or entailing less risk of loss, than would the maintenance of excess capacity in the export trades. Given the need for investment in increasing the country's international reserves, why should it take the form of accumulating specific items of capital equipment, when an enlargement of the gold reserves has the advantages of a much smaller maintenance cost, no risk of obsolescence, and no necessity for detailed forecasting ? Why, also, should it take the form most likely to maximize the gain accruing to foreigners from a sudden rise in the prices of British imports?

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[1] For example, Mr. Henderson suggests that if progress consists in the development of new goods, exports may expand even if prices are not much affected by growth ; the export of better goods at the same prices could be interpreted as a ' virtual ' deterioration of the country's terms of trade.

[2] This is implied by the terminology of pp. 165–6 ; parenthetically, analysis in terms of whether the exporter turns away orders or is able to meet them implies altogether too comfortable a view of Britain's position in world trade.

These, however, are superficial arguments; fundamentally, the problem arises from the maintenance of a fixed exchange rate when export prices are sticky and import prices volatile—with a flexible exchange rate the reluctance of exporters to raise prices to their customers could be offset by the impersonal mechanism of a change in the rate. The real issue is whether the maintenance of a fixed rate is worth the investment required, in one form or another, to safeguard it against disturbances; the question of whether that investment should pander to the desire of exporters to undercharge their customers, as Mr. Henderson recommends, is quite subsidiary.[1] Mr. Henderson's failure to raise this issue is particularly surprising, in view of the pains he takes to show that the traditional means of defending a fixed rate—deflation of demand and prices—will not work smoothly in the contemporary British economy.

(*c*) *Problems and Prospects*

As remarked earlier in these comments, Mr. Henderson's arguments are based on two axioms—that a high rate of increase of productivity is desirable and failure to achieve it a serious matter, and that its achievement requires the stimulation of industrial investment. To these might be added a third—that a fixed exchange rate is a good thing—whose conflict with the other two inhibits logical analysis and is left unresolved. In the long-run, however, the desirability of a fixed rate is a secondary matter, and will not be discussed here.

Philosophically speaking, there is nothing inherently desirable in a high rate of economic growth : insistence on it as the sole criterion of efficiency for economic systems is a currently fashionable value-judgment less defensible than those economists usually make, amounting in extreme cases to pure fetishism. If a society does not place a high value on the material results of growth or the social conditions required to produce rapid growth, there is no reason for viewing a low rate of growth in that society with alarm.[2] A low rate of growth is a problem, however, if for one reason or another a society requires a high rate of increase in the flow of disposable goods and services. Even then, the pursuit of a high rate of growth of the economy is not the only possible alternative : on the one hand, it might be preferable to modify the factors tending to require a high rate of growth; on the other hand, it might be more efficient to attempt to secure a high rate of increase of real income outside the confines of the national economy. More concretely, the British way of life is not the American way of life, and a relatively low rate of growth may be most conducive to the welfare of the population, when all aspects of welfare and not merely consumption of goods are considered. It may be, however, that various aspects of British social philosophy, such as the emphasis on social betterment and the assumption of military and economic obligations towards other nations, require a fairly rapid rate of increase of real income, whose achievement is inhibited by other aspects, such as the emphasis on social responsibility in the education system. In that case it might be preferable to accept the unattainability of a high growth rate and reduce the rate of growth of demands on national output, for example by re-assessing and limiting the country's role in international affairs. Alternatively, if a high rate of increase of real income is regarded as a necessity, it might be easier to attain by shifting productive activity to more favourable locations by migration and foreign investment than by seeking to force the expansion of the British economy by home investment.

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[1] Judging by the expansion plans of the motor industry, the problem may well be to restrain rather than encourage the growth of excess capacity in some exporting industries.

[2] As a matter of fact, there is some doubt whether the recent masochistic tendency to bewail Britain's low rate of growth is justified by the evidence—the rate of increase of British productivity since the war has been quite impressive. However, the present argument is concerned with attitudes rather than facts.

These considerations gain rather than lose point from a consideration of Britain's position and prospects in the world economy. The long-run trend of the terms of trade between manufactures and primary products is likely to be adverse to manufactures; and among manufacturing nations Britain has not only lost her earlier supremacy to the United States but is likely to face increasing competition both from other industrial nations and from the industrialization policies of developing countries. In face of these adverse circumstances, it is questionable whether Britain might not be better advised to accept and adjust to a gradual surrender of her place as a leading industrial nation, either by a planned withdrawal from the competitive struggle or by a planned transfer of productive resources (labour and capital) to other countries where the prospects of growth are better, than to attempt to retain her present relative position among the industrial nations by rapid expansion of her productive capacity.[1]

If it is accepted both that a high rate of growth of real income is desirable and that it must be sought through expansion of the domestic economy (as opposed to participation in the development of other economies) it still may not follow that a high rate of increase of productivity is desirable. Rates of growth in the rest of the world and the difficulty of maintaining, let alone expanding Britain's share in world trade may set a rather low limit to the rate of increase of productivity which it is worthwhile to pursue (assuming that it is real income which is desirable, and that to raise the rate of increase of productivity requires both social and economic costs). This is particularly likely if Britain has to squeeze into the manufacturing market between the United States, with its advantages in terms of abundant capital and rapid technical progress, and under-developed economies with advantages in the form of cheap unskilled labour, by relying on specialized products requiring relatively large inputs of skilled labour. Nor does it follow that it is industrial productivity, and especially productivity in the export industries, which the government should seek to stimulate; in the long run, a fairly high degree of import-biased development would probably contribute more to the growth of real income.[1] This would imply both encouraging the expansion of agricultural output and encouraging the expansion of industries with a relatively low import-content of production.[2]

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[1] This pessimistic suggestion rest heavily on the view that Britain's industrial leadership derives from the application of skilled labour and capital, both of which can be acquired by other nations, to natural resources for which Britain is dependent, and likely to become increasingly dependent, on other countries, and that consequently the comparative efficiency of bringing materials to the U.K. for industrial processing, as against processing them in the country of origin, is likely to diminish steadily over time.

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[1] On optimum tariff lines, there is a clear case for retaliation against the import-biased development policies (industrialization policies) which primary producing countries are likely to continue to follow.

[2] It should perhaps be emphasized that to a certain extent the adverse movement of the terms of trade would promote this result; but the process might be more painful and slow than necessary, and would not go far enough for the attainment of the maximum possible real income. The case for the policy suggested here has been put by Professor E. A. G. Robinson, in his Presidential Address to Section F of the British Association (' The Changing Structure of the British Economy,' *Economic Journal*, Vol. LXIV No. 255, pp. 443–461.)

PRODUCTIVITY GROWTH AND THE BALANCE OF TRADE[1]

By PAUL STREETEN

> 'It is one of the troubles with economics that a proposition can be as absurd as you wish it is almost always possible, by comparatively moderate qualifications, to find a similar proposition which, although perhaps quite wrong, is extremely hard to refute for the reason that complicated questions of fact are involved '. Haberler, 'Dollar Shortage ? ' in *Foreign Economic Policy for the United States*, ed. by Seymour E. Harris.

An examination of the literature on the relation between divergent rates of productivity growth and their effects on the balance of trade of the economically progressive country leaves one somewhat bewildered. There is hardly any conceivable proposition that has not been maintained by somebody.

Mr. Harrod says that it ' is not enough for a country to be more progressive than others for her balance of trade to grow; on the contrary, the fact that she is more progressive will in itself tend to make her balance of trade sink; *she must be more progressive in the lines in which she already has the lead*, than she is in other lines.'[2] To use a parachronism, only *export-biased* increases in productivity will generate an export surplus.

Professor Haberler, Mrs. Honor Croome, and Professor Hicks, on the other hand, tell us that *import* (substitute) *biased* improvements in productivity will improve the balance of trade of the progressive country, and will throw a real, as well as a monetary, burden on the foreigners. Export-biased improvements, according to Professor Hicks, ' are the least favourable from the point of view of the improving country, and the most favourable for the foreigner.'[3]

Mr. Balogh disagrees with both Mr. Harrod's and Professor Hicks's biases. It is *random* improvements, through their unpredictable impact, which generate the surplus for the progressive, and the tribulations for the more slowly improving countries.[4] But according to Professor Hicks, ' if the non-uniformity [in productivity increases] was quite random, it would certainly make little difference to the preceding argument.'[5]

Biases apart, there is the less sophisticated view that *uniformly* superior increases in productivity generate an export surplus. Professor Williams,[6] a younger Mr. Balogh,[7] and Mrs. Joan Robinson[8] thought so, and Professor Hicks gave this view his blessing.[9] Indeed, it has been widely, and perhaps too easily, accepted doctrine that if in one country productivity rises faster, relatively to money incomes, than in others, a surplus will tend to arise. This conclusion would have to be qualified if foreign demand is inelastic, if the domestic income elasticity of demand for imports is sufficiently high, if imports are very complementary to home products, etc., but it was believed to be true in general.

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[1] I am grateful to Mr. W. M. Allen, Mr. F. Seton and Mr. Beza for helpful discussions.

[2] *Dynamic Economics*, p. 109 ; my italics.

[3] ' Inaugural Lecture,' *O.E.P.*, June 1953, pp. 127–8 ; see also G. Haberler, ' Dollar Shortage ? ' *Foreign Economic Policy for the United States*, ed. by Seymour Harris, p. 438 ; Honor Croome, ' The Dollar Siege ', *Lloyds Bank Review*, July 1950.

[4] ' The Dollar Crisis Revisited,' *O.E.P.*, September, 1954.

[5] *Loc. cit.*, p. 127.

[6] *Economic Stability in the Modern World*, pp. 13–14.

[7] E.g. *Foreign Economic Policy for the United States*, pp. 467–468, *Dollar Crisis*, p. 231.

[8] *Collected Economic Papers*, pp. 193–4.

[9] *loc. cit.*

Now Mr. P. D. Henderson tells us (pp. 162–164) that a *uniformly* high rate of increase in productivity will *worsen* the balance (echoing Mr. Harrod who did not elaborate this view). He analyses the relationship between the rate of economic growth, and more specifically the rate of increase in productivity in a country, on the one hand, and the same country's balance of payments on current account on the other.

Mr. Henderson's points are these : i. the positive income effect from increased productivity is strong and leads to an increase in imports and in the domestic use of potential exports; ii. prices will not fall much (absolutely or relatively) as a result of increased productivity; iii. even if they fall, demand may be inelastic; iv. even if it is elastic, foreign rivals can easily restore the *status quo* by devaluation. He arrives at the conclusion that ' this country might well gain rather than lose from having a relatively low rate of growth ' (p. 164).

Although this particular conclusion may or may not apply to this country, Mr. Henderson's argument seems to overlook several important relations, and is therefore not valid for the general case. He would probably be the last to claim such validity, and in any case he is disarmingly modest about his ' absurdly crude analysis of a highly complex problem '.

There are two sets of questions : one, the logic of the relationships involved, and two, the magnitudes in a particular case of the variables involved. Thus the same model may give rise to a dollar shortage if the U.S.A. is the improving country, and to a sterling surfeit, if the U.K. is the improving country.

1. It is fairly obvious that if the cause of the higher rate of growth of productivity is a higher rate of investment, and the government does nothing to restrain inflation, the short-run result is a deterioration in the balance of trade.[1] But as soon as we take account of the cost-reducing effects of the investment (or of methods other than investment to raise productivity), and abstract from variations in effective demand in order to isolate the consequences of rising productivity, the situation is complicated by several effects : these are :

(*a*) the productivity-real income effect, making for a deterioration in the balance (i) if income elasticity of demand for imports is positive, by raising imports, and (ii) if income elasticity of demand for exportables is positive, by reducing exports;

(*b*) two productivity-price effects, viz., (i) the foreign substitution effect making for an improvement in the balance if money incomes in the progressive country do not rise sufficiently quickly and sufficiently high to prevent a fall in (relative) export prices, and if foreign demand for exports is elastic, and (ii) the domestic substitution effect making for an improvement in the balance if money incomes in the progressive country do not rise sufficiently quickly and sufficiently high to prevent a fall in the (relative) prices of import substitutes, and if home demand for import substitutes is elastic, by reducing imports;[1] [2]

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[1] A low foreign demand elasticity for exports, and a low home demand elasticity for import substitutes, would make for an improvement, counteracting the income effect.

(*c*) the innovation effect making for an improvement in the balance, even if the terms of trade improve;

(*d*) the quasi-demonstration effect making for an improvement in the balance by raising propensities to import and retain exportables of foreigners;

(*e*) the leisure effect, leaving the balance unchanged, if money incomes and prices remain unchanged but working hours are reduced.[3] [4]

2. Mr. Henderson says that his argument ' could have been formulated in terms of *relative* rates of growth ' for different competing industrial countries. This is not altogether true. Although increases in productivity are perhaps not likely to lead to *absolute* price reductions, the probability of *relative* reductions against a background of rising money wages everywhere is much greater. Assuming an upward pressure on money wages, either for independent reasons or because productivity rises everywhere, though unequally, it is true that higher profits arising from higher productivity will encourage greater wage demands, but a progressive tax system will work in the opposite direction. At the same time, technological progress will throw men onto the labour market, and will thus introduce an elasticity into the supply of labour which is absent in less progressive countries. The connection between differential productivity changes and movements in the general price level, in other words the link between ' real ' and ' monetary ' events is, of course, more complicated than this account suggests. Clearly, there are other important factors at work, such as import prices. But at least in some conditions a high productivity growth will be *relatively* deflationary, and vice versa. This will perhaps most probably be the case if there is a *change* in the rate of productivity increase. When the rate of growth rises, wage demands will lag behind. When it falls, inflation will threaten, and it will be easier to prevent it if productivity increases faster rather than slower. This affects Mr. Henderson's point ii.

3. Mr. Henderson underestimates one possibly important price effect, which is quite distinct from the reduction in (relative) export prices, but which will, nevertheless, tend to improve the balance of trade. In so far as productivity *in the same types of products* (but *cp.* 6 below) as those supplied by foreigners increases faster, domestic substitutes tend to replace imports.

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[1] There is a difficulty in measuring and timing the rise in real income if we assume more than one good and if the prices of these goods change. The change in the terms of trade partly determines, and is partly determined by, the rise in real income.

[2] Both income and price effects were summarised in Keynes's telling phrase of America as a ' high-living, high cost ' country.

[3] Unless managers as well as workers increase their leisure, fewer working hours may merely be a spur to further labour-saving productivity increases, reinforcing the other effects (*a*) to (*d*).

[4] Amongst further effects there is (*f*) the income distribution effect. Since income and price elasticities are different for different income classes, a rise in productivity, leading to a changed income distribution, will affect the balance of trade also in this manner. Whether money wages rise, prices remaining constant, or whether prices fall, money wages remaining constant, will be clearly relevant to this effect.

Even if foreign demand elasticities for exports are low, domestic price elasticities for import substitutes are likely to be higher. Thus, in spite of the income effect making for more imports and fewer exports, and in spite of low foreign price elasticities making for reduced exports, the domestic substitution effect may be so strong as to reduce imports sufficiently to improve the balance. Even a uniform increase in productivity thus may have a bias against imports.

4. The bias against imports is strengthened if two tendencies, apparently widespread in modern industrial countries, are taken into account:

(*a*) Productivity increases are likely to be concentrated on import substitutes. This strengthens the substitution effect in favour of domestic substitutes and against imports.

(*b*) Productivity increases are likely to be concentrated on lines on which a large proportion of additional incomes will be spent. Free enterprise has a strong incentive to increase *production* of those goods on which consumers would spend a large proportion of marginal incomes, e.g. television sets. One of the best ways of raising production is to raise *productivity*. But if a large proportion of marginal income generated by marginal production is spent upon home goods, little will be left over for additional imports, unless these are highly complementary on the production side. Since the income elasticity of demand for the goods made available by production growth and productivity growth is likely to be high, the productivity-income effect on imports is likely to be low; and certainly lower than for income increases which have other causes.

The precipitous fall in the proportion of imports to industrial production since 1939 in the U.S.A. and other industrial nations seems to confirm, or at least not to be inconsistent with, my points 3 and 4. Clearly, protection, the disruption of trade connections, etc., were also responsible for this trend, but general technological improvements, specific technological improvements in import substitutes, a high income elasticity and a high price elasticity of demand for domestic products, and hence a weak income effect on imports combined with a strong substitution effect in favour of import substitutes must have played a part. This affects Mr. Henderson's points i., ii., and iii.

5. Mr. Henderson says that if price effects outweigh income effects ' it also follows that the competitors can easily restore their competitive position by devaluing ', although he adds in brackets ' there may of course be objections to this remedy ' (p. 164 fn. 1). But surely if the objections are serious, the restoration is not ' easy '. First, Mr. Henderson applies a static argument to dynamic assumptions. A *series* of devaluations would be required if the change in productivity is not a one-time leap, but a continued differential *rate*. But a series of devaluations, once anticipated, would either have to be accompanied by an interest rate sufficiently high to deter speculation against the currency (and it is doubtful whether *any* practicable rate could do that), or lead to financial chaos. A second objection is that productivity growth in import substitutes may be a policy chosen as an alternative to, or in conjunc-

tion with, protection. If the foreigner retaliates against the successful price reductions resulting from this policy, *counter*-retaliatory protection will follow. Since this may be a case of ' anything you can do I can do too (or better) ', the effectiveness of devaluation is reduced. In oligopoly theory it is now generally recognised that the reactions of rivals must be taken into account in formulating the demand elasticity for a firm. Yet, in the theory of the foreign exchanges where the situation is analogous, demand elasticities are still defined as if countries were atomistically competitive. From the fact that demand is elastic for *relative* price reductions of one country's products, it does not follow that its rivals can restore their ' competitive position by devaluing '. Demand elasticity is partly a function of rivals' reactions, and there is no presumption of symmetry. If a high rate of productivity growth bestows a competitive advantage upon a country's sales abroad, retaliation would threaten from equally or more progressive countries, but price advantages could be secured against less progressive countries.

Besides the fear of counter-retaliation, there are other well-known objections to the use of devaluation as a remedy for a deficit created by a progressive country. The problem is not trivial, and therefore Mr. Henderson's point iv. is invalid.

6. Perhaps more important than cost reductions in the production of existing products is the fact—mentioned by Mr. Henderson at the end of his discussion—that rapid technological progress yields *new and better* products, in many of which the progressive country becomes, at any rate temporarily, a monopolist.[1] Expenditures on research in America have been distributed between product innovations (including improvements) and cost-reducing projects in a 3 to 1 ratio—and this ratio is growing.[2] In such a situation the progressive country might even charge exceptionally high prices for some of its exports, at least for some time. It is in a position to produce the things the world wants, and perhaps even to make the world want the things it produces (see 8 below) and thus can enjoy a combination of favourable *terms* and an improved *balance* of trade.

7. The fact that rapid technological progress throws up new and more attractive products widens the range of inferior goods for which, by definition, the income elasticity of demand is negative. In so far as innovation and improvement are directed at substitutes for imports, substitution effects (if elasticities are high) and negative income effects reinforce each other, reducing imports. It might appear at first that the case of inferior goods constituting the bulk of imports can be dismissed—and it usually has been dismissed. But the reaction under consideration is much more common than a reference to margarine and potatoes would suggest. The rise in income is caused by an innovation which shifts demand away from previously demanded commodities. Technological progress consists in rendering such

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[1] *Cf.* T. Balogh, *Dollar Crisis*, p. 8. Mr. Balogh was the first to raise this question.

[2] G. F. Bloom, ' Wage Pressure and Technological Discovery ' *A.E.R.*, September 1951, p. 607.

products as natural fibres, natural rubber, metal goods, inferior to synthetic fibres, synthetic ruber, and plastics. It is a dynamic inferiority, related to and caused by income rises, and it is irreversible. This affects Mr. Henderson's point i.

8. The country with the high productivity growth, by developing new products and new processes, might raise the propensities to import, and to retain exportables, of foreign countries. Although not the same, this is related to Professor Nurkse's application of the demonstration effect to international trade.[1] A higher rate of productivity growth may generate a surplus also by stirring up wants abroad, although it is more likely that a higher *level*, rather than a higher *rate of growth*, is responsible for this phenomenon, unless the skill with which products are sold abroad is also subject to high productivity growth. Thus not only the comparative cost situation gets repeatedly and unpredictably twisted in favour of the progressive country, but also the system of indifference curves. For both reasons the balance of trade of the less progressive country is reduced, unless it can carry out a series of adjustments, or protect itself.

9. In the second paragraph on p. 163 Mr. Henderson says: 'There is no *a priori* reason for expecting that the relevant price-elasticities will be high in relation to the income elasticities. Only if this is the case, and if prices are sensitive to changes in productivity, will a high rate of growth have a favourable effect on the current account balance. On the whole, it seems more likely to have the opposite result. This rather pessimistic conclusion is strengthened if price changes as well as volume changes are taken into account. One would expect that the higher the rate of growth, other things being equal, the more rapid would be the deterioration (or the slower the improvement) in the terms of trade.'

The meaning of this is obscure. 'If price changes as well as volume changes are taken into account' may mean that the *volume* of exports must rise if foreign demand elasticity is greater than zero, whereas the *value* of exports will rise only if foreign demand elasticity is greater than unity. On this interpretation the conclusion would be true but trivial. On any other interpretation the conclusion seems to be redundant or false. The pessimistic conclusion is not *strengthened* if price changes are taken into account, for Mr. Henderson argues that price changes will be small or negligible, in arriving at his pessimistic conclusion. (Prices are not 'sensitive to changes in productivity'.) If price changes are small and price elasticities are high, this leads to an *optimistic* conclusion (from the point of view of the improving country). Only if prices are very responsive to productivity changes, and foreign demand for exports as well as home demand for import substitutes are very inelastic, will there be a deterioration in the balance and a secondary burden from the worsened terms of trade. But this argument is identical with the one which is claimed to be strengthened by it.

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[1] The 'demonstration' is usually actively reinforced. Periods of rapid productivity growth were often accompanied by active efforts to sell more abroad. But, historically, successful efforts to push exports may have been the cause of productivity growth, as well as the other way round.

Summary and Conclusions

1. If productivity increases, several effects upon the balance of trade or a combination of them are *logically* possible. Either money incomes rise sufficiently to allow prices to remain constant, in which case there is only an income effect; or money incomes remain constant and prices fall sufficiently to clear the market, in which case there are substitution effects (both at home and abroad) and an income effect; or leisure rises sufficiently to allow money incomes and prices to remain constant, in which case there is no effect on the balance of trade, save through changes in income distribution.

2. An exercise in pure logic is inevitably somewhat sterile. But some general presumptions allow one to make guesses at the probable strength of the various effects.

(*a*) A rise in money incomes sufficiently rapid and sufficiently large to enable (relative) prices to remain stable is most unlikely. The rise *and* the expenditure of money incomes would have to be simultaneous with the rise in productivity. Hence complete absence of price effects can be ruled out.

(*b*) A rise in productivity is likely to be biased (i) in favour of domestic substitutes for imports, (ii) in favour of goods for which the income elasticity of demand is high. The income elasticity of demand for imports is therefore low.[1] Even if neither of these biases is present, the *domestic* substitution effect will reduce imports.

3. Productivity increase is not confined to producing existing goods at lower costs, but is mainly directed at product improvement and innovation. Progress renders some imports obsolete. This may be interpreted as a negative income elasticity for this type of imports, or as a shift in demand away from the goods produced by the low productivity country.

4. If a high rate of productivity growth is accompanied by a high level of production and consumption, or if it also applies to activities such as advertising and selling abroad, the effects on the propensities to import and to refrain from exports of foreign countries should be considered. Export receipts may rise even though price elasticities are low, and even if (relative) export prices rise.

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[1] Complementarity between imports and home production will be reduced by (i), but requires a qualification for (ii).

PRODUCTIVITY AND THE BALANCE OF PAYMENTS: A THREE COUNTRY VIEW

By J. R. SARGENT

One must congratulate Mr. Henderson on the resolution with which he checks his own dangerous thoughts. 'So far as its current account balance is concerned', he writes, 'this country might well gain rather than lose from having a relatively low rate of growth'; and he goes on to point out that the conditions under which this would be false would also make devaluation a successful remedy. A powerful argument for a quiet life; but, one is relieved to find, instinctively rejected. 'The aim of economic policy', he continues, 'should be to promote a high rate of growth, and to find some means of remaining solvent which is consistent with this'. I do not think, however, that Mr. Henderson need have relied so heavily upon his right to make judgments of value. Consider, for example, the second strand of the argument quoted above; that in so far as a country encounters difficulties in its balance of payments because it is increasing its productivity less rapidly than others, it can *ipso facto* overcome them with ease by devaluation. The argument has been fully stated elsewhere[1] and will not be recapitulated further than to point out that difficulties of this sort arise where price-elasticities of demand for imports and exports are large, and that under these conditions devaluation will be successful in rectifying an adverse balance of payments. 'There may, of course,' says Mr. Henderson, 'be objections to this remedy'. There may indeed; for under the circumstances supposed, the country with the relatively low rate of productivity growth will exhibit a persistent tendency to a deficit in its balance of payments. It will therefore require to be persistently devaluing. It matters little whether each successive devaluation would be effective; the remedy is ruled out, certainly for a country with an international currency, by the simple necessity of its being continually repeated.[2] It is hardly true to say that if trouble comes, it will come by a route which is easily defended.

But still it may not come. It is with this aspect of Mr. Henderson's argument that I shall be mainly concerned. What the relative rates of growth of productivity are in different parts of the world, is not yet finally established[3]; what the effects might be if they were such-and-such is gradually being illuminated.[4] Hitherto, however, the discussion has generally run within the limits of a two-country model; and this suppresses certain features of the situation which are likely to be of particular interest to this country. My intention is to complicate the issues by considering three countries and to elaborate the proposition that a relatively rapid advance of productivity in one country of the world, while it may be manna for the others as a whole, is bound to be mustard for some of them.[1]

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[1] H. G. Johnson, 'Increasing productivity, income-price trends, and the trade balance,' *Economic Journal*, Sept. 1954.

[2] Unless holders of the currency were unaware of the underlying causes of the devaluation, or if the successive bouts of it were separated by long enough intervals for each new exchange rate to be regarded as permanent for practical purposes.

[3] But see Sir Donald MacDougall, 'A Lecture on the Dollar Problem', *Economica*, August, 1954.

[4] See J. R. Hicks, 'An Inaugural Lecture', *Oxford Economic Papers*, June 1953, and the article by H. G. Johnson mentioned above.

Let the world consist of three countries, A, B, and C. Let A be increasing its productivity; and the first case we will consider is the one in which this productivity increase is concentrated in its export industries or, in Professor Hicks' phrase, is ' export-biassed '. B and C we will initially assume are not advancing in productivity at all. This presentation, however, may be supposed to cover the case where B and C are achieving an absolute advance which is nevertheless smaller than A's. The argument hangs largely upon the relative characteristics of the three economies; we assume that the economies of A and B are similar to each other but different from the economy of C. This vague characterisation is intended to imply in particular, first, that trade between A and B is small compared to trade between B and C and between A and C, and, secondly, that for A and B each other's products are poor substitutes for those of C, while for C the products of A and B are good substitutes for each other. It might be useful, for example, to envisage A and B as economies mainly devoted to manufacturing and C as a primary producer. The situation would then very roughly resemble that of America, Britain and the rest of the Sterling Area, or, by a scarcely bolder effort of imagination, that of America, Western Europe and the rest of the world. This is not an interpretation which is necessary for the main features of our conclusions; these would be unaffected if A and B were primary producers and C a manufacturing economy. The important point is merely that facing the country where productivity is advancing most rapidly are some which are economically dissimilar to it and some which it resembles.

Let us begin from a position in which the trade of all three countries with each other is in balance. We may suppose that the export-biassed increase in A's productivity is reflected partly in an increase in A's money income and partly in a fall in its export prices. The former we ignore for the time being. The fall in A's export prices, however, elicits from B and C a response which can be analysed into two components; a real income effect and a substitution effect. Each buys more from A because the improvement in their terms of trade has increased their real income; and each buys more from A at the expense of their home production and of their imports from each other, as they would still have done had their gain in real income been entirely sequestrated by some international Kaldor-Hicks agency. The real income effect, like the money income effect, we will also neglect for the moment. Having done this, let us further assume that the readiness of B and C to substitute towards A is such that, taken together with the fall in A's export prices, it leaves their individual balances with A unaffected.[2] Thus far, then, we have ignored or assumed out of existence all the factors which create a disturbance in the two-country case. But with three countries we have to take account of the balance between B and C. The fall in A's export prices will induce C to shift away from B as a source of imports and B to shift away from C ; both moving towards A in the manner accounted for by our assumptions. B and C thus reduce their mutual trade; but C's shift from B will be larger than B's from C. For as far as C is concerned, A's goods are highly substitutable for B's, but C produces little for which B can find substitutes in A. Put in another way, the extra imports which B enjoys from A, while maintaining its import bill with A constant, will be mainly at the expense of home production, while C's increased imports from A will be predominantly a loss to B's exports.[1] Ignoring all income effects and assuming that neither has any trouble in its balance with A, B's balance of payments will move into deficit and C's into surplus.

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[1] This point is emphasized by T. Balogh, ' The Dollar Crisis Revisited,' *O.E.P.*, Sept. 1954. Mr. Balogh, however, believes a four-country model to be necessary.

[2] We may describe this by saying that their *partial* elasticity of demand for A's goods is unity. The elasticity is partial because it excludes the real income effects of A's price change ; the total elasticity would include it.

To reach this conclusion we have tied ourselves down so tightly with assumptions that it is hard to know which to undo first. We need to take account of, first, changes in money income in A, secondly, changes in real income in B and C, and, thirdly, of the fact that the readiness of the latter two countries to substitute towards A is not likely to leave their balances with A undisturbed. The first and third of these, however, will be less far-reaching in their consequences in that they will only involve changes in the balance between A and B and between A and C, and will leave unaffected the deterioration in B's balance with C which emerged from the last paragraph.[2] They may therefore help to overcome B's problem multilaterally, but not to solve it directly. Let us take the third first. It seems certain that the inducement to substitute towards A (at a given level of real income) will be stronger for C than for B. If B were to do so, it would be foresaking predominantly its own home producers, since A's and B's products are similar; and the imperfection of competition will damp down such a move. C on the other hand will be shifting to A mainly at B's expense, and competition will probably be more perfect for C's custom between A's and B's goods than it will be for B's custom between A's goods and B's home output.[3] This would appear to hold out hopes of a harmonious multilateral adjustment, since C might shift eagerly towards A and develop a deficit with A, while B shifted much less and developed a surplus with A. The stage would then be set for a *pas-de-trois* with B paying off its deficit with C in the A currency which C required, and all three somewhere near to overall equilibrium. These hopes would not necessarily be fulfilled. For B could still respond elastically enough to the fall in A's prices (albeit less elastically than C) to pile Pelion upon Ossa by adding a deficit with A to its deficit with C.[1] The necessity for B is not merely that the eagerness of its consumers to buy more from A should be less than that of C's, but that absolutely it should be lukewarm enough for B to reduce its total bill for imports from A and thus accumulate a surplus of A's currency out of which to meet its certain deficit with C. This may require a substantial degree of imperfection in the competition between B's home production and its imports from A; a condition more likely to be fulfilled where A and B are manufacturing economies rather than primary producers. Moreover, to the extent that B does respond inelastically to A's reduced prices, the absolute size of the gain to its overall balance will not be large owing to the fact that A and B are similar economies and trade between them is small. B's improved balance with A may provide only a moderate makeweight again at its deficit with C. Furthermore B's hopes of a harmonious multilateral adjustment depend not only on the inelasticity of its own response to the fall in A's export prices, but also on the behaviour of C; and this may be double-edged. If C also responds inelastically, it becomes a large creditor, adding a surplus with A to its existing surplus with B; and B, despite its surplus with A, has difficulty in settling with C. Yet the more eager is C to buy more of A's goods, the more C's imports from B are reduced, since it is these rather than home production that C is deserting. Thus as far as the substitution effect is concerned, B must rely on substantial goodwill on the part of its home consumers towards home produced goods if it is to multilateralise its problem of payments with C; and this problem will itself be aggravated to the extent that C makes a large move in the direction, namely towards A, which would facilitate such a solution.

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[1] Our assumption that B's and C's import bills with A remain constant permits C to increase the volume of goods bought from A by a greater absolute amount than B ; for trade between A and C is larger than that between A and B with the result that C has more A currency in hand than B when its existing imports from A become cheaper. But even if B and C had increased their volumes of imports from A by identical absolute amounts, the balance of B with C would still have deteriorated owing to the fact that the identical shifts to A would have fallen in the case of B mainly on home production and in the case of C mainly on imports from B.

[2] That is to say, it will leave unaffected the fact of B's deficit with C, though not necessarily its size. The statement should also be qualified in so far as changes occur under the first and third heads which are then generalised via the foreign trade multiplier (e.g., A's increased money income spent in B causes B to import more from C, and so on). We must ask to be excused from this.

[3] The imperfection which is here stressed in the competition between B's home producers and A's exporters is intended to suggest only such ' natural ' features as transport costs, product differentiation and goodwill. In addition to these, B would be able to check any shift to A on the part of its home consumers by erecting artificial barriers like import restrictions. To some extent it could also check by these means a shift by C—cf. the effect of the inconvertibility of sterling on world dollar imports—but undoubtedly with less effect. The analysis, however, is intended to exclude the incidence af such measures, since it is designed partly to test their necessity.

How do the income effects impinge upon the situation? Let us take first the increase in money income in A. It will not solve the basic problem, which is B's deficit with C. Its contribution can only be towards multilateralising it. If we assume that before the money income effect comes into operation, there is a world shortage of A currency, then it is likely to be more severe for C than it is for B, since C is less inhibited about shifting to A. At the same time B's deficit with C will probably be substantial, since this reflects the eagerness of C to shift towards A which has involved C in a deficit with A. If A's expenditure from its increased money income is to facilitate a multilateral solution, it must be orientated heavily towards B. For this makes it possible to settle at the same time B's deficit with C and C's deficit with A, whereas if most of the A expenditure went directly to C it would not be helping to overcome B's deficit with C. There is nothing in the nature of the case to make the desirable orientation of A's expenditure the probable one; for B it must plainly be hoped for rather than reckoned on as an aid to the solution of its problem.

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[1] B's deficit with C would in this case be particularly large owing to the size of C's shift towards A.

Faced with a deficit with C round which there is at least no obvious multilateral detour, B's firmest hope lies in the operation of the real income effect not yet considered. The fall in A's export prices confers upon B and C an increase in real income. Although the benefit they receive is derived from their improved terms of trade with A, they are not bound to spend it all in A; they may also buy more from each other. Thus the real income effect will not only bear on the possibility of a multilateral solution, but will also directly affect the balance between B and C which has been the central feature of our analysis. Let us consider the latter first. C's gain in real income is greater than B's since B's trade with A is small and C's is large; and this constitutes a *prima facie* case for supposing that C will increase its imports from B more than B will increase its imports from C, with the result that B's deficit with C will be relieved or even reversed. But it does not follow that this will happen; the opposite would be perfectly compatible with our assumptions. Most of the extra imports which C enjoys from its large gain in real income might come from A, while most of B's small gain could be spent on imports from C. In such a case B's balance with C might deteriorate further. If, however, we were to regard C as a primary producer to which A's and B's goods appeared relatively luxurious, and A and B as rich manufacturing economies, the probability is that B's balance with C would benefit from the real income effect; for B would buy little more in C whereas C might substantially increase its purchases in B. But B must be careful that its products are not regarded in C as inferior goods compared with A's; for if C's consumers hold this view, they will take the opportunity of their increased real income to buy less from B and more of the superior products of A. B's balance with C will then be worse than before. We have also to consider the influence of the real income effect upon B's and C's position with A. It will of course worsen their balances with A. *Prima facie* it will worsen C's more than B's. This will be particularly noticeable if C draws most of its extra imports from A and very little from B, with the result that B's balance with C remains in substantial deficit. In this case what B loses on the swings it may partly regain on the roundabouts. For C's heavy move towards A will help to provide at any rate one of the conditions for a successful multilateral settlement, namely a deficit of C with A. The other condition, however, is that B should be in a position to supply the A currency which C requires. The real income effect makes this less likely, although, since B's gain is small, not much less likely.

If we were to sum up the effect upon B's balance of payments of an export-biassed increase in A's productivity, it might be best described as one of certain loss weighed against hypothetical or at best presumptive gains.

Certain loss is inflicted upon B by the substitution effect in the shape of a deficit with C. It would be possible, when B's and C's consumers buy more in A and when A's consumers spend their increased money incomes, for such changes to occur in A's balances with B and C as would enable B's certain deficit with C to be resolved multilaterally; but they can in no way be counted on. There is a presumption that the real income effect will operate in favour of B, improving its balance with C and only slightly worsening its balance with A; but we should be presuming too much if we relied upon it to preserve B's balance of payments intact against the depradations of the substitution effect.

The presence of export-bias in a country's productivity increase seems to provide the case where it is most likely that there will be a favourable effect on the rest of the world as a whole. But economies which are similar to the one in which productivity has increased are likely to run against difficulties, if not in their overall balances, then probably in their balances with economies which are dissimilar. Indeed there might well be circumstances in which B would prefer to face an import-biassed improvement in A's productivity, or in other words an improvement concentrated in those industries in A which compete with imports. If this occurs, B has no possibility of gaining from an inelastic response to improved terms of trade with A; for A's export prices remain unchanged. But had this possibility been realised, the advantage, as we have seen, would have been absolutely small because A and B produce similar goods and their mutual trade is not large. On the other hand, B is now immune from the severest disadvantage of the export-biassed situation, namely C's shift from B induced by A's competitive advantage over the similar products exported by B. All the shifting in the import-biassed case is done by A from imports towards home production. But if A's imports are drawn mainly from C rather than from B, because A's and B's economies are similar, then B may not be much affected.[1] It seems inevitable, before taking income effects into account, that B will face a balance of payments problem; but it may well be a smaller problem than in the export-biassed case. For although the import-biassed case inflicts on B a loss of exports to A and offers no possible advantage on the terms of trade,[2] it also saves B from a loss of exports to C, which, when it occurs in the export-biassed case, may be substantial. Perhaps for B there will be little to choose, as far as its overall balance is concerned, between the two cases.[3] There will, however, be a difference in the sort of problem to which they might give rise. Such difficulties as B might experience in the import-biassed case will be concentrated exclusively on its balance with A; in the export-biassed case they will tend to dog its balance with C, although its balance with A may also be affected.

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[1] On the other hand many of the goods with which C provides A may be specialities with which A is unlikely to be able to compete in any case—perhaps owing to the difference in climate. A's power to compete with imports should receive its greatest stimulus where competition exists, and this may come from B's goods as much as C's, although B exports less to A *in toto* than does C.

[2] To the extent that rising money incomes in A drive up her export prices and turn the terms of trade against B and C, B is the smaller sufferer owing to the limited extent of its trade with A.

[3] For C, of course, the import-biassed case is much the worst.

It may be of some interest to push our analysis of the export-biassed case a little further, relaxing our assumption that B and C are keeping their rate of productivity growth in step with each other. Consider first the case where B is advancing relatively to C, although not as fast as A. Does this confer any new advantage on B by comparison with our previous results? We assume that B's advance, like A's, is reflected partly in a rise in its money income and partly in a fall in its export prices. As regards its balance with A, B will now benefit from the appearance of a new shift, namely by A from C to B; but this will not be very important, since for A, B's goods are poor substitutes for C's, and in any case it will tend to be offset by the expenditure which B makes out of its increased money income in A. What should be more significant for B is that C's inducement to desert it in favour of A is now reduced, since the differential between A's and B's export prices is now smaller. This is bound, before taking account of B's increased money income, to improve upon B's former position relatively to C, except in the case where C's demand for B's goods is very inelastic. The exception, however, is not unlikely to be the rule when the fall in B's prices goes together with a greater fall in A's. Furthermore there will be disastrous effects upon B's balance with C if C regards B's goods as ' inferior ' to A's, and takes the opportunity of a reduction in their price to shift even more heavily towards A. This is a case where we must hope that B's cap does not fit ourselves. In the opposite case, where C is advancing in productivity but B is not, another new shift comes into operation; A shifts from B to C, but not significantly because it finds that the latter countries' goods are poor substitutes for each other. B's balance with A is worse but not much worse than previously. B's balance with C will be improved as a result of the increase in C's money income, provided that B's demand for C's goods is not too elastic. The analysis rapidly becomes tiresomely taxonomic but it enables us to observe what may be a relevant case for Great Britain. If B is a manufacturing country whose products are ' inferior ' to A's, while C is a primary producer whose exports suffer from a low price-elasticity of demand, then B's balance of payments is likely to benefit less if it forges ahead of C in its rate of productivity growth than if it lags behind.

The crudity of this experiment in 3-D is so obvious that apology is superfluous. I should like to plead, however, that anything more refined would be likely to produce a conglomeration of price- and income-elasticities which would require a special edition of the BULLETIN to house them, or perhaps another volume by Professor Meade. We may be able to discover more by bringing certain crudely simplified special cases under review in the hope that they may prove suggestive. The chief simplification made here is that of regarding A and B as similar economies and C as one dissimilar to either; which gives us a highly abstract portrait of a group consisting of America, Britain and the rest of the Sterling Area. What does this suggest, when productivity is rising in America more rapidly than in the other two? It suggests that the export-biassed case, to the extent that it results in a fall in American export prices, even if it were to ease the dollar problem for the world as a whole, is likely to entail a balance of payments problem for Britain. This problem of the total balance of payments might be overcome by rising money incomes in America or by rising real income in the Sterling Area, or solved multilaterally through an appropriate inelasticity in the British demand for American goods. Such deliverance, however, cannot be counted on, and if it comes it may still leave Britain with the structural problem of a deterioration of its balance of payments with the rest of the Sterling Area. It is interesting to observe that the current trend in the British balance of payments appears to be towards equilibrium with the Dollar Area and towards a smaller surplus with the rest of the Sterling Area—a movement consistent with the export-biassed case. This is no doubt partly attributable to a relaxation in the degree of discrimination; but if there is export-bias in the air, the trend may not cease when discrimination has. By contrast, the case of import-bias may hold no greater terrors for Great Britain. In short, as far as we are concerned, the difference between the two cases is likely to be felt not so much in the size as in the form of the impact of a relatively rapid rate of economic progress over the Atlantic.

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THE METHODOLOGY OF LONG TERM ECONOMIC POLICY ANALYSIS

By R. L. MARRIS

There appears to be a basic confusion running through much of Mr. Henderson's discussion, whose origin I believe to be methodological. My primary intention in this note is to discuss what are the methods of argument best suited to the analysis of long term policy problems of the type in reference, but in order to do so, Mr. Henderson's difficulties must be briefly summarised. His substantive conclusions were that:

(i) a high rate of economic expansion, meaning, by and large, a rapid increase in the volume index of industrial production (although, presumably, what we are really after is a high rate of increase in real incomes), is extremely desirable,

(ii) a high rate of industrial investment is probably the best way to achieve (i) but,

(iii) there will be danger of a chronic and increasing deterioration in the current-account balance of payments if we want to expand much faster than other countries, and,

(iv) the same danger may arise directly from the chronic existence of a modest degree of excess demand, which would otherwise form a harmless and probably inevitable concomitant of the high rate of expansion, hence,

(v) amongst other measures, it would be a good idea to maintain an excess of capacity over normal (average) demand in the export industries, in order to be able to take maximum advantage of the boom phase in fluctuations in export demand associated with fluctuations in the terms of trade.

(i) is, of course, a value-judgement,[1] but let us for the moment accept it as a working hypothesis and, with it, (ii). Now, if as a result of an economic expansion programme there appears a deterioration of the balance of payments, there are, surely, quite a number of well-known means short of abandoning the programme and reducing the level of domestic activity, for correcting this. One may change the exchange rate, one may impose quantitative controls on trade, one may raise tariffs, one may even do something to try and reduce the internal money wage level relatively to that in the outside world. Mr. Henderson dismisses one of these three in a superficial footnote (p. 167, fn. 4.), the others he does not mention at all: he implicitly accepts the current belief that such methods are sinful, and that internationally formulated rules which forbid them should be obeyed. He, and prevailing opinion, might be right in assuming that fixed exchange rates and so forth are more important than economic expansion, but surely the question should be discussed?

Thus Mr. Henderson's conundrum represents not so much a conflict between the needs of expansion and ' the needs of the balance of payments ' as between expansion and the desire to keep certain pre-determined rules of the game. If manipulation of the internal price level is in fact impracticable, and presumably it is, and if all other devices which permit a nation to alter her marginal and/or average propensity to import are prohibited, it is not surprising to discover, as does Mr. Henderson (p.164), that some nations may find it very difficult to pursue economic expansion at a high rate relatively to the rest of the world. Similarly, in the case of Mr. Henderson's conclusion (v) above, if British exporters, unlike Continental exporters, refuse to behave as true enterpreneurs—i.e. refuse to raise their prices in the boom or lower them in the slump—thus severely reducing average long-period foreign exchange earnings as well as their own profits, there are a number of possible remedies. One may try to persuade them to alter there behaviour (e.g. by distributiong free copies of *The Economics of Imperfect Competition*), one may vary the exchange rate at the appropiate moments, or one may pursue a policy of maintaining a reserve of unemployed capital and unemployed or under-employed labour in the export industries. However, in view of the size and wide industrial ramification of the export trades of the United Kingdom, the last expedient in fact implies maintaining excess capacity in a multitude of places right through the economy, according to the pattern of Input-Output relations—evidently an unusually expensive solution. It is surely rather bizarre, therefore, to dismiss all other possibilities out of hand ?

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[1] Not intended as a naughty word.

As an explanation of how Mr. Henderson got into this difficulty, I want to suggest my two methodological points, one half serious and one (intended to be) more serious. The first is concerned specifically with the starting point of Mr. Henderson's discussion, i.e. with the *Economic Survey;* the second concerns a trouble which seems to spread right through a great deal of all current thought about long term problems, both without government circles and within, as well as through the *Economic Surveys*.

First, anyone who ties a serious analysis to a quotation from one of the *Surveys*, even if only for presentational purposes, is asking for trouble ! As it happened, the quotation in question although extremely circumspectly treated by Mr. Henderson, did in fact contain the basic confusion which he then accepted as a basis for his own discussion. The truth is that sayings of this sort[1] have become part of the conventional *cliché* in which these *Surveys* are written, Ministers are used to them and expect to find them there, but they are not seriously intended to mean anything precise : they are akin to the thematic and harmonic mannerisms which enable the expert to ' date ' a piece of music or other work of art. The example in point, to be made sense of, would need to be translated as follows :—

' The outstanding economic problem for the United Kingdom is that

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[1] ' The outstanding economic problem facing the United Kingdom is still that of paying its way abroad, and the needs of the balance of payments must continue to govern the pace of internal expansion '. (Cmd. 9108, para. 79.)

> of maintaining a large current-account balance-of-payments surplus, and the needs of overseas investment and the need to build up gold reserves must have priority over internal expansion.'[1]

Put that way, Ministers would never have accepted the draft for publication ; the policy which emerges is not, in fact, their policy.

The above is not so frivolous a point as at first it may appear, and it leads into my second. Both in the *Economic Surveys* and in Mr. Henderson's article, there is a continuous failure to make a genuine separation of truly long run questions from those which arise largely over the need to keep the economy in short-run monetary and fiscal good health, or, more precisely, in short-run macro-economic general equilibrium. To develop the point it is necessary to digress into the nature of long term economic policy.

It is in the field of long term economic development that prescriptive applied economics really comes into its own. The long run development of an economy, surely, is rarely in practice entirely mechanistically determined ; the paths of development followed by most modern Western economies have surely been very strongly influenced by ' exogenous ' factors—by the policies of governments and the general social outlook of their peoples.[2] Whether or not this is accepted it must at least be accepted that in the long period there is very much greater scope for guidance ; fewer of the determining factors are fixed, there is a wide variety of possible paths of development upon which the economy may be set. The analyst of long term development problems may therefore be extremely bold and ' strategic ' in his thinking. He does not need to be constantly worrying about whether the current balance of payments is plus £200 or plus £250 millions: he is (or should be) much more concerned for example, with whether the basic structural dependence of the economy upon foreign trade is too great or too little, i.e. whether trade is being balanced at roughly the most suitable level. However, once the economy has been set on a path (or allowed to run onto one, perhaps by default) no quick shift to another path can easily be made, and since many of the paths are diverging, the longer an economy has been pursuing a particular path, the more difficult a switch may become.

It is therefore extremely important, in considering alternative paths of economic development and policies designed to influence the path taken, that the relevant issues should not be confused with problems connected with the cure and diagnosis of the well-known short run maladies :—excessive total demand, excessive deflation, cost-inflation, having the wrong sign showing in row 15 of Table I in the balance-of-payments *White Paper*, and so on. Granted, chronic appearance of these maladies may be a sign that the public does not like some aspects of a path of development the government has imposed upon them, but it may equally indicate merely that the technique of short-run adjustment needs overhauling. Unfortunately, during the last ten years before the last war, and the first five years following it, the cure of short run maladies has perforce engrossed the attention of economists, and, later, of governments : long term strategic thinking has constantly been confused by ' tactical ' pre-occupations. At present, within the government machine the pattern of administrative organisation also fails to make the distinction, hence another explanation of the confusion of the *Economic Survey*. And hence Mr. Henderson, who commences a section headed ' The Long Run Problem ' with a question about the balance of payments ![1]

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[1] Judging from the mid-year *White Paper*, Cmd. 9291, it appears that over 1954 as a whole there was probably a current account surplus of some £250 millions excluding Defence Aid, say £300 millions including Defence Aid. Of the latter total, rather under £100 millions was required for debt repayment, perhaps £150 millions will prove to have been the long-term capital outflow but will have been partly offset by an increase of about £100 millions in short-term indebtedness to the sterling area, leaving over £150 millions for increasing the reserves. In a recent Parliamentary reply, the Financial Secretary to the Treasury stated that the average long term capital outflow (net) during the period 1951–3 has been about £180 millions per annum.

[2] By this, I refer to relatively vague factors, such as the economic ' drive ' and ingenuity of the population, as against precise behaviouristic coefficients. However, although as will be seen I do not regard the overall rate of growth as necessarily the most significant feature of a programme of economic development, what I am saying here could be interpreted as meaning that such things as Mr. Harrod's G_n for example, and even his C_r and his s, are rather flexible.

If it is accepted that the right procedure is first to decide upon long run objectives and then to pursue such policies as will tend to implement those objectives, together with short-run policies which will keep the economy under good tactical control in the meanwhile (i.e. with all the appropriate balances balanced), the argument may be carried to a more constructive phase. Among the many long run questions to discuss, one might select as a short list the following :—

A. What overall *rate* of development ?
B. What *pattern* of development
    (1) in general,
    (2) with special reference to foreign trade ?

In elucidation of B(2) the problem is that some patterns of development generate a bigger marginal demand for imports than others, quite irrespective of their magnitude under A. And if the requirement of imports is rising rapidly, it may be found that the exchange-rate or money wage level at which the balance of payments is kept at the desired figure involves rather rapidly deteriorating terms of trade : the more rapid the increase in imports relatively to economic development in the outside world, evidently, the worse the terms of trade, i.e. the greater the relative quantity of resources which must be devoted to exports in the process of keeping trade in balance.

To the discussion of A, beyond reiterating that Mr. Henderson's choice represents a value-judgment with which I do not necessarily agree (why not more leisure instead, why this constant emphasis on Strength through

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[1] It is also a little surprising to find in an article about long-run development a major subsection headed ' the short-run problem '. This could, of course, be justified in principle by the point that one of the factors (only one), to be considered in assessing the relative merits of alternative paths of development is the extent to which each would be expected to harden or soften the task of maintaining short-run equilibrium in the interim. But Mr. Henderson's short-run section, as written, does not bring out this logical basis very clearly.

Misery ?), I have little of substance to contribute. If there is an infinitely flexible range of possibilities under B(2) above, then A is a decision which can be taken independently of B(2). But to the extent that possibilities under B(2) are restricted, it is necessary to take account, in considering A, of the fact that the higher rates of development in terms of production may show rather poor marginal returns in terms of real incomes, because of the loss on the terms of trade.

B(1). Surely more attention should be paid to this ? There may be much greater gains in welfare potentially available from careful thought about the pattern of investment, than from merely driving up the total. Academic economists ought to try and contribute more than they do to, say, informed discussion of the value-judgment involved in balancing investment in hospitals against ' productive ' investment in manufacturing industry. Mr. Henderson recognises this question in a footnote (p. 168, fn. 3), but immediately goes on to say that ' the simplest and most profitable course ' is to discuss only the question of an increase in total investment.[1] My own pet hobby horse is the pattern of investment in the fuel and power industries. Electric power produced from Atomic Energy is already cheaper in principle (if coal is priced at its scarcity value, *à la* Little) than coal-produced power, only there is not any of it available yet, and will not be for a few years. But in the meantime the B.E.A. are continuing to plough hundreds of millions of pounds[2] into the new coal-burning stations even the most efficient of which will be obsolescent almost from the day it is completed. There is of course a pressing immediate shortage of electricity (partly because it is sold too cheap) but, because of the prospective capital losses involved, the additional coal-produced electricity with which it is now planned to fill this interim gap looks like being the most expensive electricity the world has ever seen. Hidden in the current conspectus of industrial investment plans there must be dozens of major problems of this sort.

The pattern of economic development must, of course, be an integrated pattern. A variation in one feature must imply variations in others. Each alternative path of economic development therefore can be thought of as possessing a unique set of characteristics, many of which will be no more than details, but a number of which are economic characteristics of major importance to policy in general. One such major item is the characteristic listed under B(2) above, that is to say, more precisely, the probable increase in import requirements. I propose to concentrate the rest of my note on this characteristic.

The increase in import requirements consequent upon a path of economic development, must depend partly upon the pattern of the development

[1] This particular passage is another example of mixing short and long run problems. Mr. Henderson, p. 169, takes it as read that there is something wrong with the British economy and he then mentions a number of suggestions which have been made for ' improving the situation '. In the list which follows he treats various forms of adjustment in the current level of effective demand as on a par with two clearly long-term propositions, to wit a reduction in the relative size of the public sector and an increase in investment.

[2] To be precise, £750 millions between now and 1960.

implied in that path and partly upon the natural speed at which development will proceed along it. In addition, however, while economic development is proceeding, import requirements may be changing through time quite independently of the nature of the development because economic policy and technical trends may be affecting the *average* propensity to import by direct action upon the input coefficients of existing production. If we measure speed of development by reference to the rate of change of a volume index of production we may write an equation governing import requirements as follows :

$$r_Z = \pi r_p - t_1 \qquad \ldots\ldots(1)$$

where,

r_p = annual percent increase in the volume of net output,
r_Z = annual percent increase in the volume of imports,
π = elasticity of import requirements with respect to net output,
and t_1 is a trend factor.

π and t_1 require further explanation. π is the marginal import-content of production expressed in elasticity form. If one took the ' Leontief ' assumptions that in all industries input quanta were always constant proportions of output quanta, π could only differ from unity as a consequence of changes in the pattern of final demand consequent upon the increment of real income consequent upon r_p (unless all income-elasticities for final products were equal). But the essence of my philosophy in this field is that economic development carries major changes in the technique of production and the structure of industry as its inevitable concomitant : indeed such changes are the very stuff of which modern Western economic development is made. Hence π will only take on a unit value by chance, and π will vary substantially for different types of economic development pattern. For the purpose of this analysis we can therefore conveniently classify paths of development by reference to their characteristic π and their characteristic r_p.

t_1, in equation (1) is a factor whose value is partly the result of technical and social trend (for instance, the influence of synthetic fibres upon the total input coefficient for clothing) and partly of government policy—tariffs, agricultural subsidies and so forth. The precise distinction between π, or rather $(\pi - 1)$ and the autonomous element in t_1 is that $(\pi - 1)$ represents the effect upon imports of those changes in the technique of production which would not have occurred had production remained constant, while the autonomous element in t_1 represents the effects of technical and social change which would have occurred *en tous cas*.

In order to determine the effect of a larger import requirement upon the terms of trade we need to know the shape of our Foreign Transformation Curve and the extent, if any, to which this curve is shifting bodily through time. A static foreign transformation curve expresses the volume of imports as a non-linear function of the volume of exports on the assumption that the balance of trade measured in real terms is kept constant. Assuming for the moment no trend we may derive from this concept a definition of the functional relationship between the change in the required volume of imports and the change in the volume of exports which will be necessary to obtain them or *vice-versa.*

$$f_{YZ}(r_Y, r_Z) = 0 \qquad \ldots\ldots(2)$$

where r_Y is the annual percentage increase in the volume of exports. Since $r_Z = r_Y - r_X$, where r_X is the annual percentage deterioration in the terms of trade, (2) implies the existence of an explicit relationship between r_X and r_Z –

$$r_X = f_Z(r_Z) \qquad \ldots\ldots(3)$$

We may put (3) into specific form and at the same time introduce trend as follows,

$$r_X = e(r_Z - t_2) \qquad \ldots\ldots(4)$$

where e is the reciprocal elasticity of the foreign transformation curve minus one. t_2 is a trend factor representing the effect of the secular expansion of the transformation curve through time as economic activity in the outside world also expands. By substituting (1) into (4) we obtain the equation for the deterioration of the terms of trade which may be expected as a result of following a development path of given π and r_p,

$$r_X = e\{\pi r_p - (t_1 + t_2)\} \qquad \ldots\ldots(5)$$

This leads quickly to the equation for the increment in real income which may be expected from a development path of the same π and r_p, for,

$$r_N = r_p - R.r_X \qquad \ldots\ldots(6)$$

where r_N is the annual percentage increase in the aggregate real income (excluding property income from abroad) of U.K. residents and R is the proportion of foreign trade in the national product. Substituting (5) into (6) we obtain a general equation indicating the deduction from the increase in production (on account of the terms-of-trade effect) which must be made to compute the expected change in income,

$$r_N = r_p - e\{\pi r_p - (t_1 + t_2)\}R \qquad \ldots\ldots(7)$$

In an article published elsewhere[1] I have attempted to obtain empirical

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[1] *Economica,* February 1955. The point is that there is a crying linear association between the absolute level of the volume of exports and that of the terms of trade. For instance, over the whole period 1920–38, the linear correlation coefficient works out at over .95 and there is no evidence whatsoever of curvilinearity. Furthermore, if the period is separated into two parts, 1920–29 and 1930–38, not only do the correlation coefficients remain high—.95 and .90 respectively—but the parameters of the estimating equation hardly change. I write the equation

$$Y = \beta X - \alpha \ldots \qquad \text{(i)}$$

where Y and X are the volume of exports and the terms of trade respectively, both expressed as index numbers, 1930–38 = 100. This implies a hyperbola for the foreign transformation curve

$$Z = Y/X = \frac{\beta}{1 + \alpha/Y} + \text{trend} \qquad \ldots \text{(ii)}$$

Taking into account the pre-war data, modified by post-war experience I suggest (in the article) that as working magnitudes for the U.K. in the future one should put β at from 1¾ to 2 and α at about 85. (ii) implies that e, as used in this note, is Y/α, that is at the present level of Y about 2.1. Trend as defined in (ii) seems to be about ¾ per cent to 1 per cent per annum ; t_2 in the text is this figure times $\frac{e+1}{e}$. In a projection, e depends on the projected Y which depends, via (ii), on the required Z. R also, of course, is not a constant. The empirical linearity of (i) rules out, in practice, the use of a constant-elasticity foreign transformation curve, and hence the above presentation in terms of elasticities and proportional rates of change in the variables is not the way in which one would perform the actual computations for policy. But it is a convenient presentation for exposition.

estimates of the orders of magnitude of some of the fixed parameters of the above equation for the case of the United Kingdom at the present time. My results imply that at the present level of trade, e stands at just over 2.0, but that the foreign transformation curve is not of constant elasticity so that e will tend to rise if trade expands further. t_2, on the basis of recent experience, appears to be running something over 1 per cent per annum. R is about .25.

Equation (5) then summarises my conception of this particular aspect of the long term policy decision-problem. r_p and π characterise the development path whose desirability is under consideration. t_2 depends on technical progress and economic policy in the outside world and, except through projects such as the Colombo Plan, is evidently beyond the influence of the inhabitants of the United Kingdom. If t_1 were zero and π happened to be unity, a programme involving an increase in production of 3 per cent per annum, would, in the initial stages, yield an increase in real income of 2 per cent per annum; a more drastic programme with production rising at 5 per cent per annum would have an income yield of 3 per cent, and so on; the loss becoming proportionately severer for the more drastic programmes. If the 3 per cent programme were so biased against imports that its π were as low as .67 (not unduly low in the light of past history, one would think), the income yield would reach $2\frac{1}{2}$ per cent; if in addition, the autonomous element in t_1 reached 1 per cent, there would be no loss at all and income would rise by the full 3 per cent.

Thus in what seem to be plausible cases the terms-of-trade-effects of economic development, while important, are not disastrous. But this is only in the initial stages; after ten years the 3 per cent programme with unit π and zero t_1, for example, would be yielding only 1 per cent per annum in income.[1] With the 5 per cent programme the situation would become impossible quite early. If we want a path with a fast rate of development, either it must be a path with a low π, or we must step up t_1 by means of economic policy. Now it may well be asked, if it is possible to raise t_1 by policy, why not do so in any case, irrespective of economic development, choosing both the best position for t_1 in terms of static Optimum-Tariff analysis and the best economic development programme, thus getting the best of each world? But operations on t_1 are not necessarily without cost, either moral or physical: we are, after all, in GATT, and the argument that universal application of Optimum-Tariff philosophy would leave the world as a whole worse off has some validity. But the moral case is rather different if we are trying to protect ourselves against the terms-of-trade effect of ambitious economic expansion. It is somewhat unreasonable to suggest that because other countries do not want to develop fast, we must not either. Indeed, the moral argument is here completely reversed; for if all countries obeyed this dismal rule, world economic development would be slow.[2]

[1] Due to the rise in e with Y, see fn. 1., p. 21 above.

[2] Which is the real answer to Sir Donald MacDougall, who propounds the moral argument against optimim tariffs in his note in the *Economic Journal*, September, 1950.

In this country it is possible to vary t_1 very considerably and without international political complications, simply by varying the rate of subsidy on marginal agricultural production (the cost, apart from declining physical productivity, being any loss of welfare attributable to the shift in the distribution of income towards farmers due to the technical difficulty of avoiding the payment of rent-like subsidies to intra-marginal producers). My own personal opinion, for what it is worth, is that the best procedure is probably to follow the path which looks best from the general national point of view simply on the basis of my criteria A and B (1) above, leaving π, as it were, to look after itself. Then if in the event the result seems to be involving an unduly severe deterioration in the terms of trade, t_1 may be adjusted to redress the balance. This procedure has the advantage of avoiding dependence on forecasts, e.g. such as implied in using my empirical equation. But since it is undesirable to keep turning agricultural subsidies on and off like a tap—more than is absolutely necessary—my equation, or one like it, could be used to get a rough idea of prospects and so give guidance for initial policies.

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ON MINIMISING THE RISKS OF GROWTH

By DUDLEY SEERS

'The crucial question,' Mr. Henderson says 'is to devise economic policies which will promote a high rate of growth of productivity and output.'

At first sight it seems almost axiomatic that an economist should favour growth—no more to be questioned than, say, that a theologian should be a protagonist of virtue. Whatever their views on how the national product should be distributed, and on the extent to which it can and should be stabilised, members of our profession are unanimous in wanting it to grow and grow. Let me hasten to add that any apparent scepticism is not to be taken as confession of a sort of Higher Doubt in economics; the recantation comes in due course.

One could, however, make a case, if one were so minded, against letting the national product of the United Kingdom rise rapidly, or at least against actively encouraging it to do so. A sceptic about the virtues of growth would start, I imagine, by pointing out that it would be dangerous for the citizens of the United Kingdom to grow accustomed to higher living standards, since this would involve a still higher dependence on imported food and materials. The increased dependence resulting from growth may well involve a growth of risks, both economic and strategic, in the second half of this century, if one makes any reasonable extrapolation from the trends of the first half.

A less extreme position may however, as so often, be more popular. One need not be so revolutionary (or is it reactionary ?) as actually to oppose growth in order to feel some surprise at the way in which Mr. Henderson first summons up, to exorcize the insolvency he himself fears, the hope of a consequent 'immense competitive advantage' and then asserts that anyway solvency must have a lower priority than expansion.

Yet if solvency is not the object of expansion, what is ? In the long run, capital investment is by definition a means, not an end. Moreover Mr. Henderson could hardly have in mind a large rise in Government expenditure (and it would have to be relatively enormous). Thus higher consumption is left as the residuary legatee of the death of our active balance.

Mr. Henderson's argument can therefore be summarised, without great unfairness, as follows : In order to raise consumption let us drive up production by using various measures, monetary and fiscal, to stimulate large-scale industrial investment, trusting that the consequent increase in competitive power enables us to pay for the imports involved.

Supposing one starts instead by asking: what requires us to take the risks of further expansion ? Then questions of how much, and by what means, we should stimulate investment seem to fit more naturally into place.

There would not be much quarrel with the view, *pace* Mr. Henderson, that our first priority is to rebuild the gold reserves, and our second to develop the Commonwealth.[1] So far as economic programming is concerned, the latter is certainly an attainable object, in the sense that we can decide to finance certain development schemes. To achieve a dollar surplus without aid is a different proposition : it has been the object, so far unattained, of many eminent economic strategists, and it is unlikely that anything very useful can be added to the discussion. Since however, the structural reasons for world dollar scarcity are generally subsiding, the dollar problem in the long run becomes merged in the general problem of achieving a (requited) export surplus. In whatever way this is done, by deliberately turning the terms of trade further against us (devaluation, export subsidies, etc.), or by restraining imports, the solution increases the load on the economy.

An expansion of personal income is implied by any increase in the national product,[2] and the problem is to prevent it hurting the balance of payments. There are three clues to its solution. The first is that we should encourage savings, about which Mr. Henderson seems rather under-consumptionist. Now even if savings are a ' bad thing ' in the short run, they surely ought to be considered a ' good thing ' in a *long-term* discussion, because one starts drawing up a long-term programme simply with pen and ink and a clean sheet of paper : one need not assume that one is going to be on the brink of large-scale unemployment. On the contrary, in a long-term programme, one must surely expect to be short of resources. Then the higher the savings the faster will progress be towards national objectives for any given ' fullness ' of employment one considers desirable (or tolerable). Secondly, to expand on a point of Mr. Henderson's, there are some lines of consumer goods in which standardisation would bring great economies (for example where dies or presses tend to be used at less than capacity), notably household appliances. By shifting private expenditure towards them, provided we invest fairly heavily in these fields, an expansion of consumption can complement a rise in exports.[3] Thirdly, to paraphrase Mill, demand for commodities need not be demand for imports, provided one steers the public's purchases by taxation, controls, or what-you-will, to items which are shown (by input-output analysis if one wants to be sophisticated) not to embody a high proportion of imports.[4]

The increase in investment would thus be what is needed to enable the economy to meet these tasks. No doubt it would be eventually induced by such a programme. Mr. Henderson seems to rely primarily on an ' accelerrator' for his rise in investment, with some help from fiscal and monetary policies. But in recent years, even though industrial capacity has been bursting at the seams, because of the wartime neglect of capital, and even though considerable inducements have already been given by successive Governments, industrial investment has not been on a spectacular scale. One cannot help wondering whether even the present rate will be maintained. Since a large increase in production will be needed, particularly in 'heavy' industries, there would seem to be a strong case for the Government anticipating requirements of capital, and taking steps to see that it will be available. Industrialists could hardly take into account the amount of steel, say, or the number of bulldozers, needed in five or ten years as a result of certain Government decisions (which may not look to them very final): they would improperly neglect their shareholder's interests if they ran risks of over-capacity merely because to take these risks would be in the national interest. It is a matter for political taste just how various industries should be induced to satisfy any long-term capital requirements—by subsidy, by fiat, by nationalisation (or by threat of nationalisation). But some sort of rough picture of a long-term solution (a programme, if one likes), with its implications for the major industries, needs to be sketched.

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[1] There seems to be a curious idea that we have at least temporarily solved the dollar problem. Eliminate ' special receipts '—as one surely must if one wants to know whether one has achieved complete economic independence—and our gold reserves would have continued to fall even over 1953 and 1954, despite the arrival of much short-term capital

[2] In fact the political problem seems to be how to prevent the consumer taking all the potential increase in the national product, particularly when television advertising has started to depress thriftiness.

[3] This suggests the need for a cheap line, possibly subsidised, in each of the major appliances—a ' people's refrigerator ', a ' people's radio ', etc.—requiring doubtless some Government initiative. Such lines can simultaneously draw off the rising personal income and be used as ' spearheads ' in export markets.

[4] Services and housing qualify on this criterion without any analysis at all. Fortunately household appliances also have low import content.

It is a bore to insist on solvency, but perhaps the underlying weaknesses of our position require us to exercise slightly more foresight and guidance, both in consumption and investment, than Mr. Henderson feels necessary.

Oxford.

INTERNAL GROWTH AND EXTERNAL SOLVENCY

CONFLICTING NEEDS OF HOME INVESTMENT AND THE BALANCE OF PAYMENTS

By RAGNAR NURKSE

I

The subject may first be approached concretely in terms of Great Britain's industrial structure. Let us recall some basic facts. Fully half of British exports now consist of metal and engineering products. Machinery is by far the biggest single group in this category, with ' other engineering products', motor vehicles, and iron and steel coming next.[1] These products together account for about four-fifths of the very remarkable, though still insufficient, increase in the total volume of British exports since the years just before the war. While total exports have increased since then by some 60 or 70 per cent in real volume,[2] exports of engineering products alone have increased approximately two and a half times.

Behind the shift in the composition of exports lies a considerable expansion in the productive capacity of Great Britain's metal-working industries. These gained nearly the whole increase in the country's labour force over the ten years to 1946, and have expanded further since then. They now employ half of the total number of workers engaged in manufacturing.

These changes, partly induced by war requirements, have conformed to the dominant trends in world markets. The growth in the share of capital goods in international trade, which has long been going on, seems to have accelerated. These are precisely the goods, comprising a wide range of engineering and metal products, in which the United Kingdom may hope to have a comparative advantage, for reasons which I need not enlarge upon, and which have been well stated by C. A. R. Crosland in *Britain's Economic Position*, pp. 101–5. Britain has done much better in that particular category than in world exports of manufactured goods as a whole, even though since 1951 progress has been slow and uneven until quite recently. That is the category in which world markets are expanding, and where further advances seem possible for British exports. The ' backward ' countries are a growing source of demand for capital goods. Some of this demand is for the extensive investment that is needed in these countries merely to keep pace with population growth. But this suits the United Kingdom's export interest just as well as investment for ' development ' in a more genuine sense of the term.

Thus the engineering industries have come to occupy a crucial position in the British economy. Their task is not only to provide the extra exports needed for the country to pay its way in the world but also to supply what is required to renew and enlarge the country's own capital equipment. Their output is at present about equally divided between these two purposes, investment and exports each absorbing well over £1,000 millions' worth of engineering goods a year. Defence requirements and civilian consumption take up a much smaller share.[1] Home investment and export needs are the two great competitors for the output of machinery, plant and transport equipment. Here we have in its most conspicuous form the makings of potential conflict between internal growth and external solvency; and this is the point on which I shall concentrate. It is in this direction that Mr. P. D. Henderson's comprehensive survey may best be supplemented.

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[1] *Economic Survey for* 1954, p. 13. 'Arms and ammunition,' shown separately, are not included in metal and engineering products. With the important exception of cars for personal use, these products are typically capital instruments or ' producers' durable goods '.

[2] Depending on whether post-war or pre-war prices are used for valuing the quantities exported in the two periods. See A. K. Cairncross, ' Britain's Export Prospects ', London and Cambridge Economic Bulletin, *The Times Review of Industry*, June 1954. Evidently prices of engineering goods have increased less than those of other British export products.

' Internal growth ' is taken to mean increasing productivity in the sense of output per man-hour. Capital investment is not the only way to obtain this, but is nevertheless an important condition of growth.

II

The conflict erupted violently on three occasions during the period of post-war re-equipment. The balance-of-payments crises of 1947, 1949 and 1951 led each time to a massive assault on domestic investment. The *White Paper* that set forth the ' capital cuts ' announced in November 1947 (Cmd. 7268) stated that more resources for the manufacture of exports ' can only be obtained to any significant extent by the postponement of certain investment projects. The size, scope and number of these projects must, therefore, be reduced . . . to save scarce labour and materials for diversion to even more urgent uses '. The need for ' diversion ' was, of course, then and on later occasions, a consequence of full employment: more goods for export could not quickly be got through further expansion of output. The same need arose in 1949 when, in the same state of strained capacity, the improvement in the foreign balance which devaluation was to bring about had to be matched by some form of domestic retrenchment: hence again a policy of investment cuts, announced in October 1949. In 1951–52, in the face of a sudden deterioration of the trade balance, complicated this time by the rearmament programme, both Mr. Gaitskell and Mr. Butler relied heavily, once more, on a policy of cutting down fixed investment as well as stock accumulation; and although the Conservative Chancellor revived the instrument of monetary policy for this purpose, the new Government, like the old, made use of tax measures and direct controls, such as steel allocation and building licensing, to check and discourage capital outlay.

In short, whenever something has gone wrong with the balance of payments, domestic investment has been hit on the head, and hit hard. No wonder it is feeling a little dispirited in consequence.

The competitive relation between home investment and the foreign balance is not simply an accounting relationship. The connection is a substantive one. Nor is it only an outcome of the structural characteristics of British production and trade. It can be viewed as being based on more general grounds as well. In a private enterprise economy—and perhaps in a democratic welfare state too—investment is by its nature, in a certain sense, a residual quantity. A basic function of the interest mechanism of the gold-standard age was to make a country *live within its means* by varying its domestic capital outlay in response to the interest rate in accordance with the needs of the foreign balance. In sharp and short disturbances inventory investment may frequently have been the main balancer, but more persistent strains must have tended to affect long-term interest rates and thereby fixed investment as well. In much the same way, though under rather different policy influences, the United Kingdom's balance of payments was quickly relieved through the reductions in inventory investment in 1947–48, 1949–50 and 1951–52. But these reductions, though partly results of Government measures, were largely unintended and unexpected results. The great object of policy in each crisis was to cut down the rate of fixed capital formation.

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[1] These statements are based on the table entitled ' Inter-industry transactions, 1950 ', in *National Income and Expenditure*, 1946–53 (Table 15) and on other information concerning changes since 1950.

Capital cuts are undoubtedly in some ways a convenient remedy for balance-of-payments troubles. For one thing, investment at home and exports abroad have the same domestic income effects. A shift from one to the other creates no new problems of inflationary pressure. The tug-of-war between exports and home investment leaves aggregate money income unchanged. And given the structural characteristics in the British case, it was merely a matter of diverting the output of the same industries from domestic to external markets and so did not necessarily involve any difficult labour transfers or frictional losses.

So much for policies. In actual fact, after a great upsurge in the first two post-war years (1946–47, when the current external account showed a big deficit, which was closed in 1948), the real volume of total fixed investment in the United Kingdom showed a degree of steadiness surprising in view of the attacks made upon it. Inventory investment, moving inversely with the foreign balance, proved a far more flexible item in the short period. New fixed investment always requires some organization, planning and designing, and individual projects take some time to complete. Cuts in fixed capital formation cannot therefore afford an immediate solution of balance-of-payments problems, especially if work already in hand is not to be interrupted, as was the Government's expressly stated policy (Cmd. 7862, p. 30).

Yet merely to keep down the rate of fixed investment at a time when post-war re-equipment needs were urgent and omnipresent may be counted as an achievement from the view-point of the foreign balance. It was due very largely to administrative action, but I would not, without further evidence, exclude off-hand the influence of the rise in interest rates and of the attendant circumstances, especially in the period 1949–52. Its effect should not be looked for in the *total* volume of capital outlay. Public investment, a large and growing part of the total, undertaken by the central Government, nationalised industries and local authorities, was in the main protected from the impact of dearer money. However, private fixed investment in real terms appears to have declined quite sharply in the years 1950–52.[1] The contrast remains even if new housing is left out of account : the real volume of investment, which in the public sector went on expanding, declined in the private sector in those years by about one-sixth. Over private investment, cynics have said, the Government had at least some control, while over public investment it had none.

There is no doubt that, on the whole, the needs of the balance of payments *have* governed the pace of internal investment in the recent past. Whether they must continue to do so, as the *Economic Survey for* 1954 suggests in a weighty pronouncement on p. 37 is another matter. I share Mr. Henderson's misgivings about the order of priorities implied in that statement. Much better is the remark made in the preceding *Survey*, that for 1953, p. 29 : ' Restrictions on productive investment cannot . . . be regarded as a permanent or satisfactory means of helping exports, for they run directly counter to the long-term needs of the economy.' Agreed; but what should be done ?

III

The answer that comes to mind at once is : expand the labour force and plant capacity of Britain's engineering industries. Recognising that these are the most promising export industries as well as the industries on which internal economic growth will largely have to rely, the aim must be to put an end to the painful need to divert their output forcibly from time to time in this or that direction. Besides, these industries are at least potentially important for defence as well as for opulence and solvency.

The recipe is simple, but far from easy to follow. If it is to be carried out without prejudice to exports, it means that more of the current output of investment goods (machinery, plant and vehicles) available for home use must be retained for the expansion of the investment-goods industries themselves.[2] For a time it may mean starving some consumer-goods industries of the equipment they need for mere replacement, let alone expansion. It may mean reducing the supply of engineering goods directly used for personal consumption, though this is a minor claimant. In any case it seems to me that, at full employment, the expansion of engineering capacity so necessary for resolving the conflict between internal growth and foreign balance must entail some restraint on consumption : a cut in the consumer's share in any output increments resulting from current improvements in productivity, if not an absolute cut in total consumable supplies.

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[1] Rough estimates at constant prices, for public and private investment separately, can be derived from *National Income and Expenditure*, 1946–52, Tables 39 and 42.

[2] In visualising this process of feeding capital goods back into the capital-goods industries, I find myself still using the schematic representation of the structure of production which I set out in *The Review of Economic Studies*, June 1935. On the basis of the 1950 figures this process now seems to absorb only about one-seventh—certainly not much more—of the final output which the metal, engineering and vehicle industries produce for domestic investment purposes. Those industries in 1952 accounted for 53 per cent of the total wage-bill in manufacturing but only for 36 per cent of gross fixed capital formation in manufacturing (including buildings as well as plant, machinery, etc.). The total for manufacturing was, in turn, only one-third of all gross investment in fixed capital, excluding new housing. See *National Income and Expenditure*, 1946–53, Tables 14, 15, 44, 47.

Restraints on consumption, however, while releasing the means, may kill the will to invest.

Before looking into this dilemma we should perhaps stop to consider whether these hardships are really necessary. Mr. Henderson's paper is imbued with a belief in the expansibility of output even under conditions of full employment. Here I cannot help feeling sceptical. Is this the lesson of post-war experience in Great Britain ? The proposition that the ' limits to the increase in demand which the system can meet successfully at any given time . . . seem to be a great deal wider than is often suggested ' (p. 165) is unsupported by any evidence other than a footnote in which reference is made to ' the response of the economy in the past year [1953] to the rise in exports and in the building programme '.[1] But 1953 was a year of recovery from the little slump of 1952. The volume of exports in 1953 was still below 1950, and that of building only very slightly higher. ' By the end of 1953, however,' as Mr. Henderson tells us elsewhere, ' full employment had been restored ' (p. 148).

The pull of home demand, it is said, ' will only cause exports to fall off . . . if firms are working fairly close to capacity. Provided that it has reserves of capacity, and the labour to make use of them, no firm will want to turn away orders ' (p. 165). But, first, the proviso that reserve capacity exists seems to me to be a big ' if ' indeed. Secondly, even though firms may not turn away export orders, the trouble is that orders will not come unless delivery dates as well as prices are competitive. It may be a cosy feeling that comes from a queue of customers waiting at the door, but foreigners are not likely to queue up if they can get what they need elsewhere.

A remarkable statement appears on p. 171 : ' Even if industrial investment were to increase by 25 per cent over its level last year, the absolute value of such an increase . . . would only be between £350 m. and £400 m. per year.' And this ' should not cause much trouble '. Evidently by industrial investment is meant total fixed investment excluding new housing. The output of the engineering industries, scarcely affected by the 1952 slump, was even higher in 1953 than in 1951. Some increase in engineering capacity has taken place. Given the existing capacity, however, it seems to me inconceivable that domestic fixed investment could be pushed up by 25 per cent without causing a serious reduction in supplies of engineering products available for export.

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[1] In the same footnote, in support of the same view, it is said that ' not even the boldest commentator has been willing to state precisely when demand in this country ceased to be excessive, and inflationary pressure disappeared ' (p. 165). A few pages later (p. 170) we find the author himself bold enough to state that ' inflation came to an end at least two years ago,' that is, in the first half of 1952,—a precise enough statement with which I think most of us would agree.

Some slack, it is true, existed in 1953. The *Survey for* 1954 observes that ' in most of the industries making capital goods there was a fall in the volume of exports in 1953 ' and that consequently ' a number of these industries have spare capacity which could be used for increasing exports or home investment ' (p. 36). In its review of employment conditions, however, it also points out that ' the demand for skilled engineering workers continued to be the most difficult one to meet ' (p. 30). The margin of reserve in the productive potential of investment-goods industries cannot have been very large, and must have been narrowed further as a result of developments in the first half of 1954. Reports published in *The Economist* and elsewhere tell of some tightness developing again in the supply position of steel products in the summer of 1954, despite a record level of steel output.

Far be it from me to dogmatise on a question of fact such as this. Yet I am prepared to assert, at least for the sake of discussion, that a substantial increase in the productive capacity of the United Kingdom's investment-goods industries is imperative for both internal growth and external solvency. The post-war emphasis on investment in highly capital-intensive public services such as railway transport and electric power, whose installations had suffered from war-time strains and shortages, was in my opinion essentially correct. But that was only the first stage. The second should be a programme of investment concentrating for some years on expanding the industries that turn out capital goods. It is only in a third stage that one may expect a flow of equipment ample enough to supply the investment needs of consumer-goods industries without slowing down the export drive. It is only then that the fruits of accumulation will begin to come into view in consumable form. Re-equipment and capital growth in the great mass of miscellaneous industry catering for consumers' needs are much to be desired. But until the capacity of investment industries has been substantially enlarged it would be unsafe to foster such activities on any extensive scale; they might easily endanger the external balance.

The aggregative approach of national expenditure accounting, separating investment as a whole from personal consumption spending, is somewhat inadequate here since it fails to take into account the internal structure of the investment process : the need for *reducing* investment in consumption-goods industries in the course of increasing investment in investment-goods industries. This prior enlargement of ' investment capacity ' is the next step to be taken. As pointed out earlier, the official estimates of capital formation by industry groups in 1953 clearly suggest that the level of investment in Britain's investment-goods industries is at present disproportionately low.

IV

Some of the resources required for building up the country's investment capacity in the second phase may come from reduced investment in the basic overhead services which got the lion's share of investible funds in the first phase. Considering, however, the probable magnitude of the task in the second phase, along with the fact that the first still leaves arrears to be made up in such fields as road building and coal mining, we cannot expect any switch of this sort in the composition of investment to be anything like sufficient.

It follows that in a state of fairly full employment, which we must hope will be maintained, the expansion of investment capacity cannot be carried out without withholding or indeed, quite likely, withdrawing resources from the consumption sector. This calls for increased saving. But, as Mr. Henderson says, ' it is ludicrous to advocate an increase in savings as a *means* to higher investment. A policy of reducing consumers' demand, unless it were accompanied—or preferably, preceded—by a determined effort to encourage investment by other means, would be worse than useless. Through its effect on current sales, and hence on expectations concerning future demand, it would reduce investment by businesses. It would release resources, but they would remain unused ' (p. 170).

I am not inclined to underrate the seriousness of this dilemma. Taxation can be an effective means of forced saving through public finance, which under the Cripps régime emerged as a major source of investible funds in the years 1948–50. But is it compatible with private investment incentives ? The suggestion that it is, which I made in *Problems of Capital Formation in Underdeveloped Countries*, is rather superficial and in need of qualification.

It is an astonishing feature of the present British economy that the public sector, which accounts for a mere 20 per cent of the gross national product, is responsible for well over half of the gross fixed capital investment in the country. Moreover, if the type of capital asset in public ownership has on the average a longer life than that in private business, and if the public capital stock is not larger than the private, it is possible that a lesser proportion of public capital outlay each year is for replacement and maintenance, so that the public sector's share in the *net* total of fixed investment might be even higher than in the gross.[1] But this is mere conjecture. What the Blue Book tells us is that the *gross* amount of fixed capital formation undertaken by the central Government, public corporations and local authorities in 1953 was no less than £1,317 million, out of a national total of £2,333 million in that year. Even with new housing excluded the share of the public sector in total fixed investment in 1953 was almost exactly 50 per cent. (*National Income and Expenditure*, 1946–53, Table 43).

What is the explanation of the disproportionate role of the public sector in total investment ? The importance of public overhead facilities in the post-war re-equipment programme is probably of some relevance. But the reason may be something deeper as well. It may be that since private business incentives to invest have been depressed by the forced saving imposed by the State through fiscal policy, the State itself has been driven to take over the act of investment as well as that of saving; or at all events, that private investment activity, as a result of depressed incentives, has shrunk compared with the activity of the public sector.

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[1] It seems in this connection significant that, excluding new housing, the value of other building and works in 1953 constitutes 21 per cent of private and 44 per cent of public gross fixed investment, the rest being plant, machinery, vehicles, etc.

The problem, *pace* Mr. Henderson (p. 169), is shot through with political implications. State investment is one way out of the dilemma. But there is another : that of providing drastic inducements, assurances and all possible facilities to private industrial investment as and when consumption demand is curbed to make room for the increase in investment capacity.

The investment-goods industries have been left in private hands. Consistently with this decision, have all means been tried to encourage them to enlarge their capacity ? Something has been done since 1953, but stronger measures may be needed. These might conceivably include such measures as cheap insurance against any losses arising from surplus capacity; subsidies; low-interest or interest-free loans; tax reductions or exemptions for profits—and not only for profits re-invested, since the problem is to provide the incentives as well as the means for capital development. All this might have effects on income distribution : again a political question.

The building-up of investment capacity may for a time, as already indicated, leave less plant and machinery over for consumer-goods industries. Investment in the latter might actually have to be discouraged during that period, rather than stimulated. It is only when the capacity of the investment-goods industries has been enlarged that the special inducements for capital installations might be extended to the consumption industries if their demand for equipment should lag behind the increased supplies then available.

It is important to recognise that a given inducement—a certain reduction in interest rates, for example—is apt to be of very varying effectiveness depending on the entrepreneurial environment. Hyper-inflation in Germany in 1922–23 had long-lasting effects on German business psychology. The long period of suppressed inflation in Great Britain has also had its effects—on the attitudes of industrial managers as on the ways of shop assistants. Inducements that may seem extravagant in one set of circumstances may be a bare minimum for effectiveness in another.

Direct measures are indeed sometimes disappointingly ineffective. The Government subsidies on the installation of new equipment in the Lancashire cotton industry were actually not used up to the full extent of the amounts offered during the years when they were in force. But that was the case of an industry with both a history and a prospect of long-run decline.

The case of engineering industries is different. Yet we should remember the peculiar risks and uncertainties of capital development in industries making capital goods. Investment anywhere is to some extent a gamble. But investment in this group of industries undoubtedly calls for a higher order of faith than in the common run of industry producing directly consumable goods and services.

These are among the considerations to keep in mind if ‘ artificial ’ inducements seem excessively generous. Industrial investment in the United

Kingdom is widely regarded as inadequate, a view which I accept without wishing to take up space for discussing precisely what the standards of 'adequacy' might be. It will be realised, of course, that all the capital creation of the post-war period has been barely enough to make up for war-time losses and arrears of maintenance and replacement,[1] to say nothing of the arrears accumulated before the war.

The measures adopted to encourage investment will have to be strong enough not just to compensate, but to over-compensate for the possible deterrent effect of the restraints on consumption. Without such restraints, in an economy with an unemployment ratio of less than 2 per cent, the human and material resources are not likely to be available to make any substantial headway towards the enlargement of investment capacity. It seems to me a mistake to think that the recent revival of personal saving has created new scope for a forward march of private investment. It is true that many individual firms have no financial obstacle to expansion. But most of the increase in personal and business saving has been offset by a drop in the investible funds arising in the public sector (see *National Income and Expenditure*, 1946–53, Table 42). Unless public investment is to be cut down as well—a possibility which we have already noted—a mere shift in the sources of aggregate saving cannot increase the margin of real resources available for private investment. The return to a more normal propensity to save (resulting, it seems, from a return to a more normal relation between liquid assets and money incomes, rather than from a reversal of the changes in income distribution which received so much of the blame for the negative showing of personal saving after the war) has undoubtedly made the task easier. All the same, the probable need for restraints on consumption remains, along with the consequent danger of depressing investment incentives.

Whether private investment, however, is quite so closely geared to consumer demand as Mr. Henderson suggests is perhaps debatable, for a number of reasons.

(1) Any mechanical application of the acceleration principle, picturing changes in the volume of consumption as requiring or inducing corresponding changes in the stock of fixed capital, would hardly be adequate to the problem before us. The induced investment with which the acceleration principle is concerned relates in the main to the horizontal 'widening' (or else contraction) of the capital structure *pari passu* with changes in the size of the labour force employed. What is wanted, however, for increased productivity in Britain, is above all a *deepening* of capital: an increase in the capital-intensity of production and in the stock of capital per worker. This is what low interest rates and the special incentives mentioned would be designed to achieve. No doubt, even capital-deepening depends ultimately on faith in future demand; the degree of dependence will vary in different industries. But this intensive type of investment, unlike the extensive, is

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[1] See Sir Dennis Robertson's lucid account of the position in *Britain in the World Economy*, pp. 11–13. The statement in the text does not take into account the war-time liquidation of overseas assets.

essentially a structural change in methods of production and a major source or accompaniment of economic progress.

(2) Even on the basis of the acceleration principle, induced investment in fixed capital should be related, as Professor Hicks suggests (*Trade Cycle*, p. 38), not to consumption alone but to total output including investment. A given project of capital construction is likely, and should be allowed, to induce other investment in industries making capital goods. Such induced investment in capital-goods production may tend to offset any depressing effects of a deliberate cut in consumption.

(3) In an open economy, it should be remembered, inducements to capital outlay can arise from export demand as well as home consumption. Export demand is very important for Britain's engineering industries, though for the economy as a whole I would hestitate to accept the view which Mr. Henderson quotes at the start of his analysis : ' . . . in an economy such as the United Kingdom, the rate at which output increases will be largely determined by the demand for exports . . . The rate of growth from this point of view depends on the expansion of foreign markets ' (p. 162). If this were true there would be little reason to worry about the deterrent effects on investment of cuts in domestic consumption. But it is only partly true. The more realistic view is that of Mr. Butler : ' Although what happens in other countries may affect us vitally, it is the level of our own internal demand which exerts the major influence on the course of production in this country ' (Budget Speech, April 6th, 1954).

(4) Full employment should and probably will be maintained. In these circumstances any temporary restraints on consumption that may be necessary to make room for the enlargement of investment capacity is likely to have less discouraging effects than an unchecked cyclical downturn in consumers' purchases. It is doubtful to what extent any relation between consumption and investment established for a freely fluctuating economy in the past is applicable to the present system of fiscal and monetary controls. There is no dispute about Keynes's view, which Mr. Henderson quotes, that ' up to the point where full employment prevails, the growth of capital depends not at all on a low propensity to consume but is, on the contrary, held back by it.' But would Keynes have thought the present British economy far below full employment ? Lord Beveridge took an unemployment ratio of 3 per cent as his standard, which many regarded as wildly optimistic.

Yet I would not deny altogether the possible existence of a dilemma. If entrepreneurs are cautious to start with, a fiscal squeeze on consumption may make them still more cautious. The direct inducements offered will then have to be all the more powerful, if private investment is to take place on a big enough scale to make some impression on the rate of economic growth.

V

We have considered the expansion of Britain's engineering industries, first, as a way of resolving the painful conflict between the needs of home re-equipment and export promotion that has plagued the course of economic policy since the war and, more fundamentally, as part of the enlargement of the physical investment capacity necessary for a high rate of internal economic growth in the future. It is impossible for me here to enter at all fully into the external implications of accelerated internal growth. Mr. Henderson's pessimistic findings seem at variance with those suggested by Professor Hicks in his Inaugural Lecture. Quite clearly, many things are possible, depending on particular circumstances. Perhaps the best thing to do is to achieve the desired rate of growth and see what happens. Economic progress, like full employment, is not something that we need to renounce for fear of upsetting the external balance. The danger may prove groundless, and if it does not, there are steps that can then be taken to deal with it.

The popular case for a high level of domestic investment is often based on the ground that Great Britain's competitive power abroad must be strengthened if the country's ability to pay its way in the world is to be made secure. Home investment with a view to increasing productivity appears in this argument as the direct means to achieving long-run external balance. The economist is right when he retorts that if advances in productivity are accompanied by wage increases, as they well might be, they will not permit reductions to be made in the prices at which British exports are sold abroad, and that, alternately, such reductions can be obtained by a stroke of the pen through devaluation (or by selective export subsidies) if money wages can be prevented from rising.

To lay the emphasis exclusively on investment in export industries, as is sometimes done, can be misleading for similar reasons. Any process of capital development along the lines that promise the best return is almost bound to alter, in one direction or another, the scale of *relative* costs and prices within the country. The groups of export and import commodities will not remain fixed in composition. Industries with particularly high rates of advance in output per man-hour may well tend to be, or to become, export industries. It does not follow that the problem of external balance is best attacked by pumping capital into a certain group of industries just because they happen at the moment to be the export industries. The case in favour of more investment in Britain's metal and engineering industries must be based in the main on long-range considerations of growth; that is, on more than the simple fact that these industries (judging from the 1950 figures) now export 45 per cent of their output.

While admitting that anything may happen, I am nevertheless personally inclined to believe that increased productivity will tend fundamentally to help rather than hinder the maintenance of external balance; not because it will necessarily reduce export prices abroad, but because a high level of real income and consumption—high in relation to past peaks at home as well as to present levels observed elsewhere—renders it easier for a country to live within its means. This belief, which rests on at least two circumstances likely to influence a nation's consumption function, is in my mind closely related to some elementary principles of external solvency.

A fully employed economy at a given level of productivity has no way of removing a deficit in its foreign balance unless it can cut down its absorption of resources for domestic purposes (consumption, investment and government spending). Balance-of-payments measures such as import restrictions or changes in exchange rates are of limited efficacy in this respect. When imports are forcibly reduced the money that consumers spent on them can be diverted to domestic goods and services, in which case the result will tend to be inflationary pressure on the home market leading to curtailment of supplies available for export. The money might, however, he saved, in which case the reduction in total spending that is necessary for correcting the trade balance comes about directly as a result of the import restrictions. But how much can we expect from this ' automatic ' effect ? Domestic production of import substitutes is often advocated as a means of improving the foreign balance, and indeed usually results from balance-of-payments restrictions on imports,but is exactly the wrong thing to happen if we want to rely on increased saving induced by import cuts.

Let us turn then to exchange-rate adjustment : however favourable the price elasticities, and abstracting from any worsening of the terms of trade, devaluation will be of no use unless some act of domestic retrenchment is enforced that serves to *make room* for an improvement in the foreign balance. If this is done, total money income will tend to remain unchanged (and if income remains unchanged income elasticities will be irrelevant). If it is not done, any increase in exports or decrease in imports resulting from devaluation will cause an inflation of money incomes and prices, leading to renewed weakness in the balance of payments.

This is the so-called ' absorption approach ' that is now sometimes opposed to the ' elasticity approach ' to international equilibrium analysis.[1] The opposition is entirely unreal; like the two scissor-blades, both are necessary. We find, however, a prominent advocate of the absorption approach still searching for *automatic* influences of devaluation on domestic absorption; and these prove to be tenuous indeed, if not actually perverse.[2] But why assume that there must exist, if only we could discover it, a self-regulating mechanism of international adjustment ? The conclusion is inescapable that domestic expenditure must form an essential and deliberate *policy variable* for the maintenance of external balance.

No country trying to keep solvent can neglect the use of this instrument, no matter what the structural requirements of its external economic policy may be. International equilibrium in the British case must probably mean not simply an even balance on current account but also the restoration of monetary reserves together with some transfer capacity for capital export to the less developed parts of the sterling area. The ' expansionist ' solution through increased exports, discussed above, requires one kind of structural change in the British economy (enlargement of investment-goods industries); the ' restrictionist ' solution through economising imports requires another (expansion of British agriculture). Within a limited range the two solutions need not perhaps be mutually inconsistent; beyond that range they certainly are. Although the choice between the two is not my present subject, I need not conceal my own opinion that the expansionist course, despite its risks, holds out the greater promise of prosperity. But in either case the basic principles of external equilibrium remain the same.[1]

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[1] The notion that a country's net balance on foreign account is necessarily and identically equal to what the country produce *less* what it ' absorbs' for its own uses is, of course, nothing new. It is a central theme in Isaac Gervaise's *System or Theory of the Trade of the World* (London, 1720) of which a summary by J. M. Letiche was published in *The Journal of Political Economy*, Feb. 1952.

[2] S. Alexander, ' Effects of Devaluation on a Trade Balance,' I.M.F. *Staff Papers*, April, 1952.

Reliance on exchange-rate fluctuations alone does not meet the need for a domestic expenditure policy. The need arises, however, at full employment. In an economy with plenty of slack there may easily be room for *increasing* domestic absorption and improving the foreign balance at the same time. Neglect of the absorption aspects in discussions of exchange adjustment may have been due to the influence of ' depression economics ', but is not permissible in the economics of full employment, in which more than one aspect of classical doctrine comes into its own again.

Reliance on domestic expenditure policy alone is liable to conflict with the maintenance of full employment. In general, therefore, *two* policy variables are required[2]: on the one hand, exchange-rate variation, domestic price reduction, export subsidies, or import restrictions; on the other,—always an appropriate change in domestic outlay. But what kind of outlay ?

Investment, being a form of private deficit spending, used to bear the brunt of adjustment as a more or less automatic outcome of the gold-standard rules of the game. The ' natural ' forces making for accumulation are no longer so buoyant that we can afford any such game. Under present conditions, if a country is not just to live but also to grow within its means, any unavoidable burden of external adjustment must not be allowed to fall on home investment as a sort of residual claimant. A closer control of consumption demand is surely possible. Given such control, the problem of external solvency in a growing economy should give no cause for despair or even pessimism.

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New York.[*]

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[1] The fact that these principles deal largely in aggregates corresponds simply to the nature of the case. There will always be particular goods that some people think are being over-imported or under-exported, and that accordingly will form the object of special endeavours of one sort or another. But the nature of the problem requires the accounts as a whole to be in balance, and the specific-commodity approach, though it has important uses, and was in substance adopted in this paper at the start, can never do complete justice to it.

[2] Apart from J. E. Meade's monumental work, J. Tinbergen has made this very clear in a paper on ' The Relation between Internal Inflation and the Balance of Payments ', Banca Nazionale del Lavoro, *Quarterly Review*, Oct.-Dec., 1952.

[*] Prepared at Nuffield College, Oxford, under a grant from the Columbia University Council for Research in the Social Sciences.

INDUSTRIAL EFFICIENCY AND GROWTH

By CHARLES KENNEDY

I find myself so much in agreement with what Mr. Henderson has written in his challenging article and at the same time so conscious of being unable to give any useful answers to the very many questions that he raises that I shall attempt little in the way of direct comment on his article as such. I propose instead to discuss at somewhat greater length an assumption which is basic to the last section of Mr. Henderson's article, namely the assumption that a high rate of investment is desirable. Mr. Henderson argues (p. 169) firstly that almost all industrial investment will have some effect in increasing productivity and will therefore lead to growth of output; and secondly that a satisfactory rate of growth will in any case demand a higher rate of industrial investment than has prevailed in the last few years.

I am myself in agreement with these views of Mr. Henderson, but I am not so sure that he is right to take for granted as he does the unanimity of economists on this issue. Not so long ago, in the debate which followed the publication of Dr. Rostas' first comparisons of industrial productivity,[1] some arguments were put forward which seemed to carry very different implications : increases in productivity, it was held, could be bought at too high a price. It is these arguments which I intend to re-examine in the following pages.

All this, however, is familiar ground, and my justification for going over it once more is twofold. In the first place, the original discussion is so complicated with arguments of a detailed statistical and technical kind that it is only too easy for the student of the literature to lose sight of the broad economic issues involved. It is true that these issues were brought to the forefront by Professor Jewkes in the important paper he wrote at the time,[2] but his treatment of them, for reasons to be given below, cannot be accepted without very serious reservations. In the second place—and this to me is a more important justification—the original discussion wears nowadays a somewhat old-fashioned look, in that it seems to refer to an economy which, if not actually stationary, grows only as a result of capital accumulation. The problem of industrial efficiency in an economy where technological progress is taking place has received all too little in the way of analytical treatment from economists. The latter part of this paper, which will take the form of a discussion of obsolescence, is intended as a positive contribution to this important subject. I make no apology for treating all these problems on a theoretical level. This seems to me still to be a field where economic theory —even economic principles—are of direct application to practical problems. And if their applicability is, as we shall have to allow, only limited, it is all the more important to be clear what the limits are.

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[1] *E.J.*, April, 1943.

[2] ' Is British Industry Inefficient ? ' *Manchester School*, January, 1946.

Professor Jewkes' basic objection to calculations of productivity, i.e. output per man or per man-hour, is that they cannot be used as indices of business or industrial efficiency. ' The only general test of efficiency,' he says, ' is cost and price.'[1] Now no-one will dispute the *prima facie* force of this objection; and indeed, if we interpret Professor Jewkes' statement in a certain light, we can accept it wholeheartedly. We should agree, I think, that with given prices the efficient business man is he who produces any given output at lowest possible cost. And since an ostensible purpose of Professor Jewkes' paper was to vindicate the British business man, there is no doubt that it was the efficiency of the business man that he had largely in mind. If, however, we then proceed to identify the efficiency of the business man with the efficiency of industry as a whole—as I think Professor Jewkes does, implicitly if not explicity—the applicability of his principle must come in for some serious questioning. Nor is there much doubt as to where the questioning should begin—with the notion of cost.

The term ' cost ', in its now generally accepted sense of sacrifice, is altogether too accommodating, for sacrifices can be of different kinds. What especially concerns us is that costs to a business man may be very different from costs looked at from a national point of view. But I must make it clear at once that I am not here primarily concerned with Pigovian divergences between private and social cost, though these are of course important, but with something more fundamental. It is not merely that the various private costs may differ from social costs as to their magnitude but that they also differ in their very character. Even this would not be a fatal objection to our applying Professor Jewkes' criterion of efficiency to industry as a whole, provided the various private costs did represent, however imperfectly, social costs which themselves were in principle comparable. But this, as we shall see, is not the case, especially where the costs involved in the use of capital are concerned.

The above considerations suggest the form that the rest of this paper can most usefully take. Our task will be to take the three kinds of cost that the entrepreneur has to consider in connexion with his use of capital, i.e. depreciation, obsolescence and the initial costs of investment, and to examine the significance of each of these when looked at from the social rather than from the private point of view. It will be convenient to leave obsolescence to the last, as it is by far the most complex. As long as we are only considering physical depreciation and the initial costs of investment, we can take as our model an economy in which technical knowledge is given. We shall also assume throughout a closed economy.

Depreciation costs should not present us with any problems. The entrepreneur must clearly take them into account along with wages and raw material costs in deciding on the technique of production he should adopt. It would obviously be absurd for him to introduce a more capitalistic method of production if the saving in wage costs were to be swallowed up in increased depreciation costs. When we move from the private to the national plane, we have to think of depreciation costs in real rather than money terms, but their significance for the national decision is the same as it was for the individual decision. It would be just as foolish for the nation to encourage the use of a more mechanistic technique if the resources required for the maintenance of capital could be more effectively used in the direct production of goods.

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[1] *Op. cit.*, p. 5.

The treatment of initial costs of investment is much less simple. In the first place it has to be recognised that even to the entrepreneur they are not immediately comparable with depreciation and other current costs. For investment involves the present sacrifice of a capital sum to obtain a flow of benefits in the future. In order to make them comparable we have to use the rate of interest and replace the initial costs of investment by the interest cost on the capital expenditure. This in itself unimportant analytical device has an important consequence. It enables us to dispense with the investment decision as an independent decision and to treat the interest cost of investment as one of the considerations which influence the choice of a productive technique. To look at it from another point of view, we can treat the entrepreneur as a mere combiner of factors of production and not at all as a capitalist.

There is no harm in doing this, so long as we know what we are doing —and so long as we remain with the individual entrepreneur. But the device becomes dangerously misleading if we try to apply it to the nation as a whole. From the national point of view, the cost of investment is the ' abstinence ' from consumption undertaken while the investment goods are being produced. If we wanted to proceed as we did with the individual entrepreneur, we should have to replace this once-for-all ' abstinence ' cost by a current ' waiting ' cost.[1] To do this is not only to replace a meaningful notion by a meaningless one, but also to obscure the essential distinction between the investment decision and the choice of productive technique.

The above remarks should not, however, be taken to mean that the investment decision is irrelevant to the choice of productive technique. But it influences the latter only by virtue of the fact that some productive techniques require more abstinence in the first stage than do others. If we are interested only in the choice of productive technique, it would no doubt be helpful to make use of the rate of interest to turn the capital cost of ' abstinence ' into a current cost of ' waiting '. But we should not be justified in doing this, unless we could discover the ' ideal ' rate of interest, i.e. the rate on the basis of which private investment decisions would also be correct from the national point of view.

There are a number of well-known reasons why we should hesitate to use the actual rate of interest as such an ' ideal ' rate, and these should be briefly mentioned. The actual rate of interest would obviously be inappropriate in times of less than full employment, when indeed the whole notion of ' abstinence ' and of an ' ideal ' rate cease to have meaning. Apart from this Keynesian objection, the actual rate of interest is suspect because it is in practice very much influenced by attitudes and circumstances which are only relevant to individual decisions. In this connexion, subjective time preference is the most important attitude and mortality the most important circumstance to be taken into account.[1] There is also a more fundamental objection. I do not believe the national investment decision can be made —nor the ' ideal ' rate of interest discovered—on purely economic grounds. To do so, we should not merely have to make inter-personal comparisions of utility, we should have to make them between the living and the unborn. Moreover, we should have to compare the utility sacrificed by abstinence in the present period with the gain in utility over a number of future periods. All this would require the assumption of cardinal utility in its most extreme form, and few of us are prepared to make this assumption nowadays. Although the economist can no doubt provide some of the data on which the national investment decision should be based, in the last resort the decision is a political one. For my own part, I am prepared to argue that a self-respecting nation should err on the side of too great rather than too little investment, but this is a political judgment rather than an economic one.

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[1] I have adopted the useful distinction between these terms proposed by Schumpeter in his *History of Economic Analysis*, O.U.P. (New York) 1954, p. 639.

The above is no doubt an inadequate treatment of a familiar but notoriously difficult subject; but it is probably good enough for our main purpose, which is to cast doubt on the applicability of ' cost and price ' as a test of industrial efficiency. These doubts are reinforced when we turn to consider obsolescence, as we must now do. To the individual entrepreneur, the obsolescence of his capital equipment has to be treated exactly on a par with physical depreciation, which it to a great extent replaces. But the significance of obsolescence costs when looked at from the national point of view is a subject fraught with so many traps that we cannot do better by way of introduction than to clear away one or two of them. The introduction of a new technique by one entrepreneur reduces the value of the existing capital, and this is what we mean by obsolescence. However, this obsolescence is not borne wholly, or even mainly, by the innovator himself—unless he is a monopolist—but by all the owners of the existing equipment. Ought the innovator not to be asked to take account of this obsolescence when he is deciding whether to exploit his innovation ? Ought he not at least to hold his hand until some of the existing equipment is worn out ? The answer to both these questions is ' no '. If the innovation is worth introducing at all, it is worth introducing at once and without reference to the state of the existing equipment. I shall not attempt to establish the point here, since the reader who doubts this particular application of the principle that ' bygones are bygones ' can refer to Professor Pigou's *Economics of Welfare*, where the ' somewhat specious fallacy ' is well disposed of.[1] On the other hand, we must not go to the opposite extreme and conclude from the above that no account at all should be taken of obsolescence costs. Such a conclusion would be in conflict with common sense, for when we look at the matter historically, we have to admit that many investments are wasted because they become obsolete before their time.

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[1] It is to be noticed, moreover, that the mortals (individuals) appear mainly on one side of the market, i.e. the lending side : the borrowers (mainly firms and the Government) are at least candidates for immortality.

The correct solution to the problem of obsolescence is perhaps not hard to find. In any decision with regard to the introduction of a new invention, it is not the obsolescence caused by the innovation which has to be taken into account, but rather the obsolescence that is to be expected in the future.[2] The wasteful innovation is not that which is too early, but that which is too little or too late.

The individual entrepreneur will himself be concerned with the obsolescence of the future and not to any great extent, unless he is a monopolist, with the obsolescence which he causes by his own actions. Can we therefore say that the individual's treatment of obsolescence costs is in line with what the nation's treatment should be, just as it was in the case of depreciation costs? There are two important reasons why we cannot accept this comfortable doctrine without qualification. In the first place the obsolescence of the future is unknown and can only be guessed, and there is a danger of its being either overestimated or underestimated. There are good reasons, however, why in practice we should be more concerned about the former danger than the latter. In a developing industry it is not the cautious and the conservative who fare the worst. They will no doubt gradually lose ground to the wise innovators, but it is the foolish innovators who will end in the bankruptcy court. Thus, foolish innovation provides its own corrective, and foolish innovators are rapidly eliminated by a process of natural selection. There is no such corrective, however, to an over-cautious policy provided it is general. Indeed, the very risks of innovation and the fate that awaits the foolish innovator mean that an attitude of caution and conservatism is only sensible, though it becomes less and less so the more rapid is the rate of innovation in an industry and the greater therefore is the obsolescence.

This last point leads us to the second qualification. Up till now we have been implicity assuming that new inventions have appeared on the scene quite autonomously : we have thought of them as having been laid down in advance—under sealed orders, as it were. In practice, however, any innovation will itself be a spur to further innovation; for, as we have seen, a conservative policy will only pay in a conservative industry.[3] This means that, when looked at from the national point of view, obsolescence costs can no longer be regarded as equivalent to depreciation costs, but that they take on some of the attributes of investment costs. Moreover, this kind of investment, which like investment in research actually leads to more innovation, is especially important. The benefits it confers on the economy are of a different order of magnitude from those conferred by mere capital accumulation. In a real sense, the benefits of the former can be said to be infinite and those of the latter only finite.[1]

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[1] Macmillan, 4th edition, 1946, pp. 188–90.

[2] Professor Pigou (*loc. cit.*) does not seem to me altogether sound in his analysis of this point.

[3] Cf. Pigou, *loc. cit.*

Let us end this paper where we began it, with the notion of ' cost '. It will have been noticed that in the foregoing we have throughout used the idea of cost in a certain way : we have looked for the costs which are relevant to some decision, whether this decision is an individual one or a national one. If we had been dealing only with an individual firm, it would have been possible, in the analysis of some though not all problems, to think of cost (and benefit) in a different light—more historically, as it were. The firm's accountant can put his finger on the costs that are paid out in any particular period and on the receipts which accrue in the same period. But I do not think such an 'historical' treatment of cost and benefit can be significantly applied to the economy as a whole,[2] and the temptation to do so brings with it certain dangers. At any rate, there is one application that the terms must not be allowed to have. It would be quite improper to take the benefits that accrue during a certain period, i.e. the flow of final consumption goods and services, and to set against these the ' waste ' of capital which occurs through obsolescence during the same period. Such a comparison would be grossly unfair, for obsolescence is caused by innovation and the benefits of innovation extend to all periods in the future. A low rate of obsolescence is not a thing on which any country is entitled to congratulate itself.

Few of the conclusions we have reached in the foregoing paragraphs would cause the least surprise to the ordinary man in the street. It is only the economist, wedded as he is to ' habitual modes of thought and expression ', who is likely to dispute them. I hope I have written enough to discredit the too simple use of ' cost and price ' as a test of industrial efficiency. But I should like finally to make it clear that it has been no part of my intention to discredit at the same time the record of the British business man. As we have seen, he has his own good reasons for erring on the side of caution and conservatism. It is no reflexion on him if we suggest that he should not be allowed to bat on so easy-paced a wicket, where the ball seems to lie heavily on the stomach of the pitch[3] and the batsman can remain in his crease with perfect safety; if we ask the Government groundsman to prepare a wicket, not with the deep depressions and deadly spots of inter-war days, but one where at least the ball will turn pretty quickly, and the batsman will have to use his feet to it—or be out !

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[1] In the absence of technical innovation, all that investment in any one period can do is to bring the economy one step nearer to the state of ' bliss ', which will be achieved sooner or later in any case. Its benefit is only temporary and therefore limited. Innovation, on the other hand, improves the prospects of the economy for all time.

[2] Even where the theory of the firm is concerned, it has always seemed to me that more emphasis could usefully be put on particular decisions and less on particular periods of time. This I take also to be broadly the standpoint of Professor Robinson (*E.J.*, June, 1951, pp. 430–1), and I have never been able to see the justification for Farrell's charge (*O.E.P.*, February, 1953, p. 47n) that the former's approach is methodologically improper.

[3] Mr. Robertson-Glasgow's phrase.

INVESTMENT POLICY

By W. ARTHUR LEWIS

I do not agree with Mr. Henderson's conclusions on investment policy.

In the first place investment in the U.K. is not so obviously low as he makes it out to be. Gross domestic fixed investment is about 15 per cent of Gross National Product, compared with 17 per cent in the U.S.A. But whereas the U.S.A.'s population is growing by more than 1½ per cent per annum, the U.K.'s population is growing by less than 0.5 per cent. This means that the U.K. needs 4 to 5 per cent less net investment than the U.S.A. to achieve the same proportionate deepening of capital, and the U.K. in fact does rather better than this. Since the proportion of gross fixed investment going into agriculture, mining and manufacturing is the same in both countries (about one-third) it is not surprising that productivity per man is growing at about the same rate. It is certainly arguable that the rate of investment is too low in this country, but it is not self-evident.

In the second place, his remedy, which is to subsidise investment, depends on the assumption that businesses are not investing more because gross margins are not high enough. There is no evidence to support this. Businesses are not investing more because they can meet the demand adequately and profitably with their present plans. If demand were pressing upon supply they would invest more; as it is not, they do not.

A few Schumpeterian industrial leaders will invest more even if there is no pressure of demand. They will create a demand for new products or new styles; or will they seize opportunities to reduce costs by installing better plant. Their actions account for tens of millions of pounds of new investment every year. Mr. Henderson, however, is talking about hundreds of millions more investment, and for this he must rely on the ordinary rank and file of the business community investing more. This they will do substantially beyond their present level only if they cannot meet current and expected demands with their current equipment and current plans.

Hence, if investment is to be substantially larger, demand must be substantially greater. There is no difficulty in increasing home demand. The government has only to reduce taxation of personal income, while keeping expenditure constant; or to increase expenditure (for example on roads, as Mr. Henderson rightly suggests) without increasing taxes. The trouble is that if home demand increases there will be increased imports, which will cause balance of payments difficulties unless paralleled by increased exports. It follows that any measures to increase home demand must be accompanied by measures to increase exports. Since there is no difficulty in increasing home demand, the real problem is to increase the demand for British exports. If more exports could be sold, home and foreign demand could be increased together without balance of payments difficulties. And then there would be greater investment. Of course, if we are to have increases in demand and in investment on top of full employment, there will be some inflationary pressure—at least at first, until rising productivity and a changing distribution of income restore equilibrium. The acceleration of investment programmes to higher levels always brings some initial inflation.

Since world trade in manufactures normally doubles every twenty-five years (if there is no world war), our exports would rise by about 3 per cent per annum if only we could hold our percentage share of world trade constant. This ought not to be difficult to achieve, but the fact is that we have failed to achieve it since about 1860. Between 1820 and 1860 British exports of manufactures increased by about 6 per cent per annum; thereafter the rate of increase was only 2 per cent per annum, compared with over 3 per cent for the rest of the world, and the British share has fallen continuously. Our principal rival has been neither Germany nor Japan, but the United States of America, whose share of world trade in manufactures has risen during the past ninety years by just about the 20 percentage points by which the British share has fallen. If both the British and the U.S. trade in manufactures could be held to an annual increase of about 3 per cent per annum, Mr. Henderson would get automatically about as much investment as he wants; (and the dollar problem, which is due to the U.S. propensity to export exceeding her propensity to import, would at the same time disappear). If we could sell more exports, we would have more investment, and in due course our standard of living would rise more rapidly. How to sell more exports is the crux of Mr. Henderson's problem, but this calls for separate treatment.[1]

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[1] I discuss this problem in ' Trade Drives ', *The District Bank Review*, December 1954.

INVESTMENT AND ECONOMIC GROWTH

By N. H. Leyland

In the section of his article on investment and economic growth Mr. Henderson concentrates his attention on the part the Government can play in stimulating productivity growth by encouraging investment. It is in this way that Government action can have the most immediate effect and he rightly lays stress on the weakness of the incentives to invest as the prime cause of the unsatisfactory level of capital formation. This weakness cannot however be considered in isolation. It is the result of complex social and political forces—forces which are expressed in the type and amount of taxation, in the type and quality of education, and in the institutional arrangements of both labour and management to inhibit competition and avoid the consequences of change. Every Anglo-American Productivity team pointed the contrast between the attitudes of British and American labour and management and their American counterparts. Clearly the economic climate cannot be changed quickly, but we are dealing with a long-run problem and tinkering with investment allowances can only be a first, though necessary, step in bringing about such a change. In an economy where the majority of investment decisions is in private hands—and Mr. Henderson suggests no change here—it is impossible to divorce the complex issues of the incentives to invest from questions about the general level of taxation and its particular forms, and though Mr. Henderson chooses not to consider the general effects of Government taxation and expenditure he cannot and does not altogether escape them.

Much play has recently been made with the belief that there is in some sense no shortage of industrial finance. Before examining the basis of this belief it is worth mentioning, however briefly, the relations between savings, finance and growth. To the economist the fundamental growth factor is capital accumulation; the improvement in techniques, invention and the social forces which encourage or impede them, are usually accepted as data. Savings are a necessary condition of capital accumulation, but the attempt to save can, by depressing demand, also slow down the rate of accumulation. Policies to encourage business and personal savings are only appropriate when there is good reason to believe that the desire to invest is strong, but this does not mean that they are never appropriate as many would have us believe, for the question of who does the economy's saving is an important one, since there is no simple connection between the volume of aggregate savings and the flow of finance into business. The fear of private saving, which is a hangover from the heady effects of Keynes' *General Theory*, may well result in a slowing down of the rate of growth of the economy. It leads to a belief, which I suspect is at present fairly widely held, that if persons and companies are encouraged to save, the economy will rapidly become depressed, while if they are discouraged from saving, any inflation can be counteracted by fiscal action. In this latter case, however, small firms—unincorporated business and partnerships—given that they wish to retain control in present hands and are thus reluctant to seek outside finance, may find it very difficult to grow. It may be argued that this does not matter since technical conditions in the new industries are such that large accumulations of capital are necessary and the small firm does not matter. There is little evidence on the importance of this point. While in general the trend is towards larger units, there are many examples of rapid growth by relatively small firms and in the interests of efficiency it is desirable that they should have grown more rapidly. It is not always the case that the successful firms now in the new industries are those that started on the largest scale, and even where it is true, that does not mean that this is the most efficient arrangement.[1] It is moreover impossible to obtain any reasonable evidence on this point. For the last twelve years the level and structure of taxation has been heavily biassed against saving by the type of entrepreneur in mind and the growth of many firms must have been seriously retarded. With different taxation they might well be now on quite a different scale. It is wrong to dismiss this point as Mr. Henderson does, on the basis of dubious conclusions drawn from aggregate statistics given in the Economic Survey for 1954 or impressions gained from surveys.

Table 20 of the *Economic Survey for* 1954 purports to show the net savings of companies. The authors give three cautions which make the interpretation of the surplus shown extremely hazardous. In the first place, because of the widespread use of F.I.F.O. for stock valuation some of the surplus in 1952 and possibly 1953 must have been needed to repay the short-term indebtedness incurred in 1950–1 when rising raw material prices combined with rising physical stocks to cause a demand for cash. This view is supported by changes in bank advances which reached a peak in April 1952 and declined throughout 1953, and by the reiterated cries of company chairmen at General Meetings. Secondly the investment figure is understated by the amount of overseas investment and this, in the words of the *Survey*, ' may constitute a substantial fraction of the surplus '. Thirdly the figures include the operations of distribution, services, finance and banking. These accounted for some 30 per cent of Gross Trading Profits in 1952 and, though it is impossible to estimate their share in investment, it can be assumed that investment was a smaller proportion. Increases in productivity in service industries are of course as desirable as increases in manufacturing but they can probably be achieved with relatively little additional capital expenditure. It is a pity that the Government statisticians did not give separate figures for manufacturing industry. They can and the outsider cannot.

There is a fourth qualification which the authors do not mention. The figures for depreciation deducted from gross profits to arrive at the surplus are based on historical cost and bear little relation to the sums needed to replace equipment in view of the high rate of taxation and the rising price of capital goods. If it could be expected that prices would be stable in the future or would even fall, this would not perhaps be such a serious matter, provided that real profits were not greatly cut. But we postulate growth and it is extremely unlikely that this will be achieved without a rising price trend. Over the period 1950–1953 prices have been rising and some part of the surplus (possibly as much as a half) should therefore properly appear as a payment. Though these sums may appear in the balance sheet as additions to free reserves they are unlikely to be regarded as such and that is the important point.[1]

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[1] It is quite likely that a large number of projects scattered among many firms *with potentialities of rapid growth* will in the long run be more fruitful than if they were concentrated in one or two hands.

Even if, when all the adjustments had been made, it still appeared that in the last two years business in the aggregate was in a fairly liquid position, it would still not be legitimate to conclude, as Mr. Henderson does, that ' a more liberal taxation policy, which allowed firms to retain a higher proportion of their current profits, would be reflected mainly in larger dividends and reserves, rather than an increase in capital expenditure '. A more ' liberal ' taxation policy would have its primary effect on the incentive to invest and whether it resulted in larger reserves or not would depend upon the strength of this primary effect.

Mr. Henderson uses a second type of evidence to prove firms are liquid. The *Manchester Guardian Survey of Industry* 1954 contains the following statements : ' We asked the firms where capital outlay is declining whether shortage of finance was a motive. . . . Not a single firm replied ' Yes '. There does not seem to be much difficulty in raising capital, and the cost of doing so, while often mentioned with concern, is not preventing plans from going through. . . . But so far as our inquiry goes no important capital outlay plans are being postponed for lack of finance '. But these plans are inadequate. To know that at this low level of capital formation there is no shortage of finance is to know little. The question to which we need to know the answer is a hypothetical one, ' If the general level of taxation were lower, would you invest more ? If so, would you then be short of finance ? ' But it is a waste of time asking business men this sort of question, and it is impossible to give an *a priori* answer.

It is difficult to propose really adequate measures to stimulate investment without proposing also policies which would seriously affect the distribution of income and the ownership of industry, but it is difficult to accept Mr. Henderson's arguments that a reduction of profits tax would be ineffective. They are that firms are not short of finance—on this the evidence can lead only to agnosticism—and that the reduction would have to be large. Profits tax could of course be abolished. It is a discriminatory tax on the very form of income it is desirable to encourage in the interests of growth. In the long run profits tax in addition to high income tax will inhibit investment.

I agree with Mr. Henderson's major proposal that, if necessary, firms should be allowed to write off all their capital expenditure in the year in which it is incurred. The advantages of this are twofold. In a time of rising prices the whole problem of depreciation on historical cost is side-stepped and firms are encouraged to invest at a time when profits are high.[1] Particular difficulties arise in the case of new firms, or firms (such as those in the oil, shipping and iron and steel industries) for whom capital investment involves regular small sums and occasional large ones. It is less stimulating than investment allowances which are additional write-offs and amount at present rates of tax to a reduction in the price of machinery of about 10 per cent. This is certainly not enough. More flexibility is required and can be achieved by allowing firms to choose their own write-off period. They would not of course be allowed to alter them arbitrarily to suit the needs of their balance sheet and they could be compelled to state in their balance sheet the period they had selected for the major items. Depreciation should moreover be charged on replacement cost and this should be accepted by the Inland Revenue. It is not beyond the wit of Government Departments to establish price indices of capital goods which could be applied to the original cost to find the allowable depreciation charge. The indices could be quite rough and apply to broad categories of plant and buildings. It is no argument against the use of a price index that it is impossible to find a good one. The prices of capital equipment do move in rough conformity and quite good guesses can be made. A combination of 100 per cent initial allowances, investment allowances, and optional write-off periods is not impossible. Certain categories of machinery could be treated as small tools are now and written off in the year, all investment could be given an investment allowance, and for major items firms could be allowed to choose their own write-off period. For such major items, depreciation allowances should be on replacement cost. Administrative problems would be raised, and the work of the Inland Revenue increased. No doubt more loop-holes for tax evasion would be found, but it is not only from business men that fresh thinking is required.

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[1] It is obvious that when prices are rising and there is no net investment, with current accounting conventions a surplus would be generated which could not affect decisions to invest at all. Indeed if marginal rates of taxation were high enough it might even happen that the surplus would not be big enough to provide replacement.

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[1] If this kind of allowance is permanent, it may therefore affect the timing rather than the amount of investment.

FLEXIBILITY AND THE STIMULATION OF INVESTMENT

By G. D. N. Worswick

1. Every year the authors of the *Economic Survey* are torn between the statistic and the *cliché*. The statistic, be it a prediction, an intention, or merely a hope, is notoriously unreliable; but at least it gives a guide to the Government's assessment of the economic situation and to the main lines of its thinking about it. One may sympathise with the authors of the *Survey for* 1954 in this annual dilemma, while regretting the almost exclusive reliance this time on the *cliché* whenever difficult economic questions are encountered.

All the more welcome is Mr. Henderson's notable and realistic analysis of recent developments in the British economy and his valuable discussion of some of the problems which lie ahead. His statistical ingenuity is admirable and I agree with a great many of his economic arguments. If my own comment appears to be mainly critical of his paper, it is simply that the reader would not appreciate the repetition of a long list of points which Mr. Henderson has already made so well.

2. One of the most disturbing features of recent years has been the relative stagnation of industrial production, whether by comparison with the performance in some other countries over the same period, notably Western Germany, or with industrial production in Britain itself in the years from 1945 to 1950. Mr. Henderson's cautious analysis of output and employment in manufacturing industry in recent years (pp. 148–154) throws more light on the problem : it is clear that changes in demand, especially in exports,[1] have been a major cause.

What is especially striking is the behaviour of productivity per man in the various industries during the recession. It seems that in those industries in which, between the end of 1950 and 1953, ' output has been determined pretty well entirely by changes in demand . . . output per employee seems to have varied in the same way as changes in demand ' (p. 151). In other industries where ' variations in demand were in themselves of far less importance ' (and where, as a rule, demand exceeded supply) productivity has risen appreciably. In Mr. Henderson's view part of this rise should be attributed to the removal of supply bottlenecks, either of capacity or of raw materials, and he warns us against counting on future rises in productivity at the same rate.

It is tempting to pray for bottlenecks, so that, by removing them, productivity can be made to go on growing fast ! Without going so far, however, it is worth dwelling on the first part of Mr. Henderson's conclusion. One of the many benefits which, it has often been claimed, would accompany disinflation, is a rise in the productivity of labour. Greater flexibility would be achieved by the elimination of shortages, and men and women would work harder for fear of unemployment. But, so far as it goes, Mr. Henderson's evidence points quite the other way. A fall in demand[2] is accompanied by a fall in productivity.

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[1] See also *Economic Survey of Europe in* 1953, Economic Commission for Europe, Geneva, 1954, Ch. 2.

[2] How the fall in demand originates is irrelevant. Business men will certainly be interested to know why demand has fallen, in order to form an opinion whether it is temporary or permanent. But their decisions will be related to their expectations about future demand : it is hard to believe that they will be directly influenced by the reasoning which led them to formulate the expectations.

One way to salvage the disinflation hypothesis is to attribute this relationship to the hoarding of labour by employers : if demand were to remain slack long enough, employers would ultimately be driven by economic necessity to disgorge their hoards, and the predicted rise in productivity would emerge. The hearts of employers have been softened by prosperity : a stretch of adversity would restore a salutary hardness.

The view that hoarding is a blameworthy indulgence, enjoyed at the expense of national output is, I believe, in the main false. It may often be convenient for economic theory to treat ' labour ' as a fairly homogeneous factor of production : but there can be few British employers to-day, even employers of predominantly unskilled labour, who see things quite so simply. The whole trend in labour, or personnel, management is to take notice of the individual potentialities of the employee and to broaden the relation between the worker and the firm beyond the cash-nexus. To an increasing extent, firms invest in individual workers, by providing training, and by financing personnel and welfare departments. It is not in their interest to dismiss redundant employees at the first sign of a slackening of demand, any more than it is in their interest immediately to sell off at second hand plant which is rendered idle.

Just as a sound case can be made for the individual firm to aim at keeping a certain normal reserve capacity of fixed plant, in a somewhat similar way there is a case for holding, *on the average*, some labour reserve. So long as all firms behave similarly in this respect their competitive position is hardly affected by a slackening in demand for the products of the industry, or group of firms, concerned.

Looked at in this light hoarding, at any rate in part, reflects a tendency towards longer effective contracts[1] for employees, which employers have found to be sound policy from the point of view of labour cost and productivity. This economic argument merges imperceptibly into the social pressure for greater security of tenure which comes through the workers' organisations. It *may* be that there is a point beyond which greater security can only be purchased at the cost of lower productivity. But it is not at all certain that this point has been reached. What is certain, however, is that if demand remains slack over longer periods the workers will demand even more insistently the maintenance of work-sharing schemes, and will tend to retreat behind well-tried restrictive barriers.

The recession of 1952 will have done some good if it prompts the advocates of disinflation to reconsider in the light of recent evidence whether nineteenth century economics can be appropriately applied to twentieth century labour relations.

3. Mr. Henderson rightly insists that it is most desirable to raise the rate of industrial investment, and there is some force in his concluding remark that the exaggerated fear of inflation has generated an unduly restrictive attitude

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[1] Not necessarily legal contracts, although the guaranteed week and holidays with pay are more widespread than before the war.

towards schemes of industrial expansion. On the other hand, his own view, that we can have our cake and eat it with no trouble at all, is an equally dangerous one.

For some of the reasons which Mr. Henderson himself so cogently gives, this is not a charge which can be substantiated with arithmetical precision. Nevertheless it is of such importance that we should be clear about what is involved in a substantial increase in industrial investment that some rather tedious, detail may be permitted. The little arithmetic that I shall indulge in refers entirely to Mr. Henderson's own calcuations for 1953 and 1954. This keeps us on fairly firm ground : but the argument and the conclusions can be extended to cover several years ahead.

What Mr. Henderson says (pp. 164–7) about the ' short-run problem ' is excellent. Metaphors of knife-edges and tight-ropes to describe the fiscal task of avoiding inflation and deflation are quite out of place. Even when the statistic of the percentage of open unemployment is low a developed industrial economy still retains considerable flexibility. There is no need to go in fear and trembling that one more pound spent will unchain an uncontrollable inflation. The right level of effective demand is not unique and sharply defined and there is a fairly broad band within which variations in effective demand will have little effect upon prices or open unemployment, being taken care of, in the short period, by stock changes and overtime or short-time working. All this is true, and consoling to those like myself who think that in a highly specialised economy the avoidance of open unemployment has its own value, to be considered in conjunction with other objectives such as higher national output or a better distribution of income. But the implications for using statistics of social accounts in budgetary planning (functional finance) are consequently awkward. When all the arithmetic has been completed there remains a range of choices, for instance, of the rates of taxation to be fixed for the coming year, within which the final selection of the right rates is a matter of judgment. What one must avoid is to argue that because there is a ' contingency ' reserve of effective demand, there is always room for a little bit more in the planning. Yet, so it seems to me, Mr. Henderson has done just this.

In his ingenious attempt to fill out the statistical picture of Part II of the *Economic Survey for* 1954, Mr. Henderson sums up the prospects for 1954 in a table entitled ' *Prospective Changes in Real Demand and Supplies between* 1953 *and* 1954 ' and goes on to say : ' If something very different had been expected, the Budget would have had to take a rather different form ' (p. 160). I deduced from this that Mr. Henderson's judgment of the picture is that it is about right, as concerns the question how full full employment ought to be. Not only is the level of employment taken as about right. So also, presumably, is the balance of payments. Following Mr. Henderson's own lines for forecasting for 1954[1] the U.K. balance of payments on current account (excluding defence aid) will look as follows :

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[1] In obtaining the estimate for 1954 I have assumed no change in the balance of invisible items between 1953 and 1954. In fact the *total* current account surplus in the first half of 1954 was £154 million.

U.K. Balance of Payments on Current Account (excluding Defence Aid)
£ million

	1951	1952	1953	1954 (estimate)
Surplus (+) or Deficit (—)	—389	+134	+123	+200

The average surplus for the four years 1951–4 works out at £23 million and for the three years 1952–4 at £152 million. In mid-1954 the gold and dollar reserves of £1,078 million were still £300 million short of the peak of mid-1951. More than once it has been suggested that, in order to contribute to building up the reserves and to take its full share in overseas investment, particularly in colonial territories, the United Kingdom should aim at a surplus on current account of £300 million a year *on the average*. This is, I think, the right sort of figure and it can be seen that by this standard there is still a long way to go. It is true that the prior problem is to sell the extra exports, but the fact that we are not doing so needs to be kept in mind in appraising economic prospects. Put the other way round, if market conditions had been such that a further £200 million a year could have been sold abroad in recent years, we surely would not have wished to absorb the whole of that in increased imports. (Some higher imports would, of course, have been needed for raw materials for the exports.)

By the same token, in the years to come, we could do well with a level of exports some £200 million or so more than what seems likely on the basis of present trends and policies.

As for the required increase in industrial investment, let us take as the goal the level of 25 per cent above 1953 which Mr. Henderson himself mentions. If this were achieved in 1954 it would amount to some £250–£300 million[1] more than Mr. Henderson has already allowed for in his table of '*Prospective Changes in Real Demand and Supplies between* 1953 *and* 1954'

If, in 1954, Mr. Henderson had his way with industrial investment and I had my way with exports,[2] his table of prospective changes between 1953 and 1954 would have added to it some £450 to £600 million of primary expenditure. This would give rise to at least £150 to £200 million of consumption expenditure,[3] so that altogether some £600 to £800 million of total demand would be added to what Mr. Henderson had already allowed for 1954, and which I am assuming he regards as sufficient from the point of view of employment.

Mr. Henderson is right when he says that if there is no indication that the desired increase in investment will in fact occur there is nothing to be said for trying to generate more savings. And with some reservations I am inclined to say that if there is no sign of the extra export markets, we might as well consume the goods at home. But it is surely not true that the economy can swallow another £600 to £800 million of real demand without either higher private savings, increased taxes or reduced Government expenditure, or some combination of all three.

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[1] This figure is reached by supposing that of the increase in gross fixed investment between 1953 and 1954 already budgeted by Mr. Henderson, some 60 per cent would be 'industrial'.

[2] Or, more exactly, with the balance of payments.

[3] This is using the ratios implicit in Mr. Henderson's table, after removing the influence of stock changes. I think the assumption that secondary expenditure will be one-third only of the primary is probably too conservative.

It is, of course, unlikely in practice that exports and industrial investment can be stepped up to these higher levels within one calendar year. In the case of investment, especially, there will be a delay between the application of any stimulus and the full consequent growth in actual investment. Meanwhile increasing productivity will always be providing a bit of extra play in the economy. But it must not be forgotten that there are other very strong claimants for any extra output, notably the current consumption of old people, and social capital outlay other than housing.

Mr. Henderson's treatment of the long-term problem of the British economy seems to me to attach too great importance to the alleged ineffectiveness of various stimuli to investment. The technical means are important, and I wish to add a further point on this topic in the concluding section of this note. But the lack, or inadequacy, of technical means has not lately been, nor is likely to be, the decisive factor governing the rate of investment.[1] The decisive factor is political will, the hard choice between present and future enjoyment. Once the will is there the technical means can be found.

4. Mr. Henderson puts the ' problem of capacity ' not simply as one of increasing industrial investment all round, but of concentrating especially on certain sectors. He rightly singles out ' the export trades and . . . the industries on which they depend' (p. 167). When it comes to prescription, however, it is the latter only which receive further mention. At one point Mr. Henderson enumerates certain strategic industries with high rates of fixed capital to output—gas, electricity, transport, mining and the production of pig iron and steel (p. 168). And, in his concluding remarks, he refers to the important role of Government in influencing investment through its control over nationalised industries, as well as the indirect influence it may exercise over private business (p. 173). Whether by accident or design, Mr. Henderson does not consider ways and means of attacking directly the problem of capacity in the export industries.

There are three reasons why it is still necessary to pay special attention to the export trades. First, there is the need for a structural adjustment of the British economy in relation to world trade, the case for which is being so forcibly argued by Professor E. A. G. Robinson. Secondly, there is the possibility of additional strain upon the balance of payments if the economy were to grow at a faster rate, which Mr. Henderson himself puts forward. Thirdly, there is the question of fluctuations in trade. In many industries exports and the home market compete for the same capacity. When exports slacken, the social pressure to absorb the capacity (and employment) on the home market is very strong. Then, when the overseas markets recover, Britain may lose valuabe export earnings because of prior commitments to the home market.

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[1] Suppose, for example, that in the Kalecki manner all capital expenditure were exempted from income and profits tax. It is hard to believe that the response to this would not be greater than the capacity of the engineering and building industries to meet it. And if it still were not enough, there is no theoretical limit to the extent to which investment could be subsidised.

It is a truism that for full flexibility a high employment economy needs reserve capacity in all industries, but what is especially needed is reserve capacity in the export industries. That is to say, the *average* reserve capacity in these industries ought to be greater than elsewhere. One cannot expect the individual export manufacturer to see things in this light. Already, he might argue, he has a riskier and more troublesome market to handle than the manufacturer who stays at home : it is too much to ask in addition that he should, in the national interest, carry at his own expense a disproportionate reserve capacity. If the national interest requires it, the nation should contribute to the cost.

In principle, this aid can be given in as many ways as there are devices to stimulate investment. If the stimulus is being provided by initial allowances they could be made larger for export manufacturers than for others. Or, to illustrate a more powerful stimulus to investment, let us consider Mr. Kalecki's ' modified income tax '. His idea is to deduct *all* capital expenditure in any one year from the gross income of that year, applying the standard rate of income tax to the remainder.[1] In this way the rate of profit on capital outlay is not affected by income tax. Mr. Kalecki goes on to point out that a varying stimulus to investment can be provided by putting only part of income tax on his ' modified ' basis.[2] An obvious possibility suggests itself of making the amount of the incentive provided depend upon the share of a firm's capacity which is devoted to exports. In practice ' capacity ' might prove impossibly difficult to define, in which case the share of output going to export might be chosen as the criterion. For example, suppose the standard rate of income tax was 7s. For firms with 100 per cent production for the home market the investment incentive might be to put 3s. in the £ on the modified basis, while for 100 per cent exporters 5s. in the £ could be on the modified basis. A firm with half home and half export production would get 4s. in the £ subject to modification, and so on.[3]

Simple in principle, the practical difficulties of providing a special incentive to export manufacturers to increase their capacity are great. Many manufacturers do not know whether the goods which leave their factories are untimately sold at home or abroad. Moreover, it would hardly be possible to check claims from all manufacturers, irrespective of the quality of the evidence they could bring in support of their claims. But this does not exclude the possibility of laying down rather stringent requirements about records from manufacturers who wished to claim the assistance, in whatever form it is given, to expanding capacity for exports. Almost certainly direct exporters, and manufacturers of finished products, would be able to fulfil the requirements more easily than those whose output was sold to general merchants or whose production was of semi-finished goods made up later into articles exported. Nevertheless the need is urgent enough to question whether perfectionism alone should be a sufficient argument against devices to increase our exporting capacity.

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[1] In the example the only tax on profits is standard rate of income tax. We are concerned only with illustration and therefore ignore ' profits tax ' proper.

[2] *Economics of Full Employment*, Blackwell, 1944, p. 48. In his reference to Mr. Kalecki's scheme, Mr. Henderson describes only the 100 per cent application of it and does not mention this important refinement.

[3] I have kept to Mr. Kalecki's way of putting his scheme forward, which was put in this rather complicated way in order to distinguish the part of the tax which affected the profit rate and the part which did not. But except in the full application of the scheme this distinction has no great significance, and a somewhat simpler procedure is to apply different rates of tax to capital expenditure and the remainder (gross income *minus* capital expenditure) respectively.

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SOME COMMENTS[1]

By P. D. HENDERSON

It would be quite impossible to review in detail all that has been said in the preceding articles. I shall only consider, very briefly, some of the arguments which have been put forward. These arguments can be grouped under three main headings: first, the relation between the rate of growth of productivity and the balance of trade; second, some of the other implications of a high rate of growth; and third, investment policy. Most of what I have to say comes under the last heading, and my remarks in connection with the other two will be rather discursive and superficial. The procedure which I have adopted has a serious disadvantage, since it means that I shall almost entirely neglect some contributions, and give only very inadequate consideration to others. This does not imply, however, that I regard them as being in any way irrelevant or unimportant.

1. PRODUCTIVITY GROWTH AND THE BALANCE OF TRADE

The most important point which I have to make, in this connection, is that the very crude attempt which I made to analyse this relationship has now been rendered obsolete by the publication of Mr. Johnson's authoritative article.[2] Everything that I set out to do, he has done incomparably better; and I am relieved to find that the conclusions which I tried to establish—or at any rate, to render plausible—are consistent with his analysis. It is perhaps unfortunate, therefore, that Mr. Streeten's contribution to this issue is not devoted to considering Mr. Johnson's analysis rather than mine. However, this may not be a very serious matter; for Mr. Streeten, as he himself says, is less concerned with the formal relationships which are involved than with ' the probable strength of the various effects '. In other words, he is concerned with what is likely to happen in practice, in the existing economic environment, rather than with the general conclusions which may be reached on the basis of rather drastic simplifying assumptions, such as those made by Mr. Johnson.

I shall consider first some of the arguments which Mr. Streeten has used, in support of his view that a relatively high rate of growth of productivity is not unlikely to have a favourable effect on a country's balance of trade. I shall then consider what assumptions are required in order to make this view plausible. Finally, I shall comment on the observations which Mr. Streeten and Mr. Johnson (in his contribution to this issue) have made, in connection with the problems of economic policy which may arise as a result of differences in the rate of growth of different countries.

I have two comments to make on Mr. Streeten's conclusions. First, it seems to me that they depend, to a far greater extent than he has realised, on the assumption that a relatively high rate of growth of productivity will cause a relative fall in prices. He argues that 'A rise in productivity is likely to be biased (i) in favour of domestic substitutes for imports, (ii) in favour of goods for which the income-elasticity of demand is high. The income-elasticity of demand for imports is therefore low.' Now even if these assumptions are both granted, the conclusion does not follow. At any given time, a country's income-elasticity of demand for imports will be entirely unaffected by whether or not such a bias exists. It will depend on how far that country has a competitive advantage—with existing price-levels, exchange-rates, and restrictions on international trade and payments—in the supply of (i) the final products for which the income-elasticity of demand of its population is high, and (ii) the intermediate products which are required, directly and indirectly, in making these. If it so happens that a country is at a disadvantage in the supply of these products, then its income-elasticity of demand for imports will be high; and this state of affairs is entirely consistent with Mr. Streeten's assumptions. All that follows from these assumptions is that, in the course of time, a country with a relatively high rate of productivity growth will increase its competitive advantage in the supply of import substitutes, and goods for which the income-elasticity of demand is high, *provided* that the higher rate of growth with respect to these goods leads to a relative fall in their prices.

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[1] In preparing this paper, I have benefited very much from comments and suggestions made by Mr. C. R. Ross.

[2] H. G. Johnson, ' Increasing Productivity, Income-Price Trends, and the Trade Balance', *Economic Journal*, September, 1954.

Second, Mr. Streeten argues that ' progress renders some imports obsolete ', so that increases in productivity lead to a downward shift in the demand curve for these imports;[1] and the higher the rate of growth of productivity, the more rapid this tendency will be. Certainly this may occur, but he ignores altogether the possibility that a country's ' progress ' may equally well render its *exports* obsolete, and thus affect its balance of trade unfavourably. He uses as an illustration the development of synthetic rubber in the United States, a case which lends support to his argument. One might also, however, refer to the development of synthetic textile materials, which has almost certainly had an adverse influence on the U.S. balance of trade, because of its effect on the demand for raw cotton. When possibilities of this kind are taken into account, Mr. Streetten's contention loses much of its force.

I conclude that one of Mr. Streeten's main arguments is formally invalid, while another is seriously one-sided and incomplete. It follows that a high rate of productivity growth is far less likely to have a favourable effect on the balance of trade than he supposes. He may still be right, however, in thinking that in practice it might well have a favourable effect—a possibility which I certainly did not exclude, and about which I remain agnostic. My main conclusions—such as they were—are unchanged; but I should like to restate then more fully and more precisely, in a form which owes much to Mr. Johnson's article, and to Mr. Sargent's and Mr. Streeten's comments.

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[1] I do not think that this should be described as a case of negative income-elasticity.

As a first approximation at least, the problem may—and should—be analysed in terms of a simplified model. The question then arises of what sort of model is most appropriate for this purpose—in other words, what restrictive assumptions it is helpful and legitimate to make. Clearly, there is no unique answer to this question; but there are several assumptions which are commonly made, and which are certainly defensible when they are used in attempting a formal analysis of the problem. These assumptions are :

(i) that the world may be regarded as consisting of only two countries—the country under consideration, and the rest of the world ;
(ii) that increases in productivity take the form of producing existing products, and exploiting existing processes, more efficiently;
(iii) that in each country, the rate of growth of output is the same as the rate of growth of productivity;
(iv) that the price-level in each country is affected only by changes in productivity;[1] and
(v) that exchange-rates are given, and remain unchanged.

Even if all these assumptions are provisionally granted, it is of course impossible to infer from them what is likely to happen in a particular case. For this purpose, it is necessary to consider (i) how far increases in productivity will lead to falling prices, and (ii) what are the approximate magnitudes of the various elasticities which are involved. Both of these are questions of fact, which can only be considered in relation to a particular country and a particular period. If they are considered in relation to the United Kingdom to-day, then in my view it is plausible to conclude that the higher the rate of growth of productivity, the more unfavourable, at any given time, will be the balance of trade. This is only a matter of opinion, however; and even if the conclusion is accepted, it can be argued that the assumptions which were made in deriving it are unrealistic, and that it would cease to be plausible if more realistic assumptions were made. It is therefore necessary to consider whether a result, which has been reached on the basis of the simplified model outlined above, will be a reliable guide to what is likely to happen in reality.

This requires a brief review of the simplifying assumptions, and it is convenient to consider them in reverse order. Assumptions (iv) and (v) present no problem, for they must surely be included in any model, however, ‘ realistic ’ it claims to be. The purpose of making them is simply to isolate the effects on relative prices of changes in productivity, so as to distinguish them from the effects of other influences, such as changes in wage-rates or exchange-rates. One or both of the assumptions may easily be quite unrealistic, since these other influences may be of great or even dominant importance; but this does not matter, so long as the other influences are regarded as data, which are independently given, and which are therefore not determined within the structure of the model. This seems to me a justifiable procedure.

Assumption (iii) is more debatable, since its realism may well be questioned, and if it does not hold good, at least approximately, then the model must be abandoned. In my judgment, however, it is likely to be a good approximation to reality,[1] provided that no significant change occurs in the total labour force or in average working hours. It is true that one can argue, as Mr. Streeten does, that increases in productivity may have a ' deflationary ' affect, so that the unemployment percentage will be positively correlated with the rate of growth of productivity, and the rate of growth of output will be relatively slow. But there is no necessary reason why this should happen—if anything, the opposite effect seems more likely; and in any case, such a tendency may be offset by deliberate government action.

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[1] So that if the rate of increase of productivity within a country is ψ per cent per period, then the price-level will fall at a rate of p per cent per period, where $0 \leq p \leq \psi$.

It is in connection with assumptions (i) and (ii) that the most serious problems arise. As Mr. Sargent has shown, it may easily be misleading to argue on the assumption that all other countries can be treated together, as a single entity; and the situation which he considers may correspond closely to the present one. In order to take into account possibilities of this kind, a more complex model is certainly needed. Finally, as I argued in my article, one's judgment about what will happen in a particular case may be considerably affected if one allows for the close association between productivity growth and the development of new products and processes. When these considerations are taken into account, it must be regarded as doubtful whether a high rate of productivity growth in the United Kingdom will have an adverse effect on the balance of trade.

I turn now to the problems of economic policy which may arise in this connection. In writing of these, Mr. Streeten suggests that I am unaware of, or indifferent to, the dangers and limitations of devaluation, while Mr. Johnson and Mr. Marris accuse me of a slavish and unreflecting adherence to the principle of fixed exchange-rates. Both charges originate from two cursory and badly-worded footnotes in my article, and I regret having expressed my arguments in such an unsatisfactory way. At the same time, I am not in agreement with the comments which have been made on them.

Mr. Streeten is concerned with the situation in which a country tends to secure an ever-increasing advantage over its competitors, and an ever-growing surplus in its balance of trade, as a result of having a relatively high rate of productivity growth and, in consequence, a relatively falling price-level. He argues that the country's competitors could not adapt themselves to this situation by devaluing, in an attempt to keep relative prices more or less in line, for two main reasons. First, a series of devaluations might be needed, which would probably cause ' financial chaos '. Second, retaliatory measures might be taken, which would render any devaluation nugatory.

The first argument is certainly a strong one, and the possibility of a series of devaluations was what I had in mind when I referred, somewhat enigmatically, to the ' objections ' which might be made to relying exclusively on exchange-rate adjustments in such a situation. On the other hand, I think that Mr. Streeten exaggerates the danger. A reduction in relative prices which became necessary *only* because of the higher rate of growth achieved in competing countries, might perhaps be brought about by means of exchange rate adjustments without the disastrous consequences which Mr. Streeten darkly refers to. It is possibly relevant to point out that the pound has recently undergone three major devaluations in a period of less than twenty years, and chaos has not resulted. It seems improbable that adjustments on this scale, and with this frequency, would be required merely because of a higher rate of productivity growth abroad. As for Mr. Streeten's second argument, it is hard to see why, if it is valid, it should be applied only to devaluation. Surely *any* general measure which is designed to improve a country's balance of payments can be nullified if its economic rivals are sufficiently ruthless and single-minded ?

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[1] If a country is subject to recurrent cyclical fluctuations, then this will not be the case for year-to-year changes ; but it is quite possible that the *trend* of output over time may approximate closely to the secular rate of growth of productivity.

Mr. Johnson's comments relate to the opposite situation, in which a high rate of growth causes the balance of payments to deteriorate. He describes the problem which would then arise as ' a conflict between the maintenance of full employment and the maintenance of fixed exchange rates ', on the grounds that, in order to reach the conclusion that a high rate of productivity growth will have this effect, ' it is necessary to assume that the monetary authorities maintain fixed exchange rates, and that they pursue whatever fiscal and monetary policies are required in order to guarantee full employment at whatever wage-price level is set by the economy.'

This is mistaken : the assumption that full employment is maintained is in no way necessary to the argument. The assumption which it *is* necessary—or at least, highly convenient—to make is that the rate of growth of output should be the same as the rate of growth of productivity. This in turn may be based on the further assumptions (i) that the labour force remains constant; (ii) that working hours do not change; and (iii) that the *proportion* of the labour force which is employed remains constant. There is no need to assume that this proportion remains at 100 per cent, or whatever figure is thought to correspond to ' full employment '. Mr. Johnson's statement of the problem is therefore misleading; clearly a fuller, if more pedestrian, description is needed.[1]

Given that a high rate of growth is causing the balance of trade to deteriorate, there are two *main* alternative courses of action, though they are not mutually exclusive, and each of them can be pursued in different ways. The first alternative is to slow down the rate of growth, and the second to adopt *some other* measure, or combination of measures, in order to rectify the balance of trade. Logically, acceptance of the first alternative, and exclusive reliance upon it, need not cause a government to alter its employment policy; for steps could be taken to reduce productivity, or to shorten working hours, so that output would be reduced without any change in employment. For practical purposes, however, it may be assumed that a choice of the first alternative implies an attempt to reduce output by reducing demand, and this would imply some increase in unemployment—though not, perhaps, a permanent one. I suggested that policies of this kind, which aimed at reducing the rate of growth, were undesirable, and that the second alternative was to be preferred—a view which I still hold.[1]

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[1] My own reference to a possible ' conflict between expansion and solvency ' was not a happy inspiration.

This choice, however, still leaves open a number of possible courses of action, as Mr. Johnson points out. I did not discuss these, nor attempt to consider their respective advantages and disadvantages, simply because I did not wish to expand unnecessarily an article which had already become excessively long, by considering a number of complex issues about which I had nothing of interest to say. I certainly did not intend to express a preference for more severe trade and exchange restrictions, as opposed to exchange depreciation—although it may be added that such a preference could be defended, and would not necessarily be the product of an irrational concern for 'the prestige of sterling'.

2. Is a High Rate of Growth Desirable ?

In this section I shall be concerned with some of the arguments advanced by Mr. Johnson, Mr. Marris, and Mr. Seers.

Mr. Johnson is right in saying that I assumed, 'without examination', that a high of productivity was desirable rate. I think that to some extent my procedure was justified, since to examine this question at all adequately would have required a long and entirely different paper. On the other hand, his strictures are well-deserved in two respects. First, although I argued that a high rate of growth might well cause the terms of trade to deteriorate, I altogether neglected the possibility that this deterioration might be serious enough to cause the rise in real income to fall considerably behind the rate of increase of productivity, or even to become negative. Second, by failing to make any qualifications later in my argument, I may well have given the impression of believing that a high rate of growth should be considered as a national objective of unique and over-riding importance, to be pursued without regard for other possible objectives. I shall now try to make good both of these omissions.

(*a*) *The rate of growth of productivity and the terms of trade*

The arguments which Mr. Johnson puts forward in this connection seem to me persuasive in themselves, but exceedingly one-sided. The following considerations are surely relevant and important—though not, of course, in any way conclusive :

(i) Mr. Johnson dismisses far too casually the argument that a high rate of growth is likely to be associated with a lead in the development of new products and new processes. As he points out, this may in some cases lead to what he describes as 'a "virtual" deterioration of the terms of trade'.

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[1] And which does not imply, as Mr. Seers suggests, the view that 'solvency must have a lower priority than expansion'.

But he ignores the possibility that this leadership may confer monopolistic advantages upon a relatively 'progressive' country,[1] so that, at any given time, it is likely to be in a more favourable situation, with respect to its terms of trade, than its less advanced industrial competitors.

(ii) There are other reasons why a high rate of growth, associated with rapid technological advances, may be advantageous in this respect. First, what is relevant here is the deterioration in the terms of trade which will be necessary in order to maintain the balance of payments. But if I am correct in arguing that the rapid development of new products and new processes will very considerably improve a country's competitive situation, then the requisite change in its terms of trade may in fact be small, at any rate when compared to the changes which may be imposed upon less advanced countries.

Second, this aspect of economic growth is relevant to Mr. Johnson's argument about the 'oligopolistic kink', which may prevent a country from increasing its share of world trade except on very unfavourable terms. It is surely clear, from the economic history of the past century, that a country which clings to obsolescent industries and methods, and which adapts itself less successfully than its rivals to economic and technological changes, can very soon lose a substantial share of world markets to other exporting countries, who may thus increase their share without necessarily having to accept a drastic worsening of their terms of trade.

(iii) Increases in productivity will in some cases take the form of reducing the imported materials required to produce a given output, and to this extent will reduce the demand for imports and the ratio of imports to total output.

(iv) In the case of the United Kingdom, the goods for which the income-elasticity of demand is high have, as Mr. Seers remarks, a low import-content.

As I have said, I do not regard these arguments as conclusive, and the possibility that increases in output will lead to a serious worsening of the terms of trade is one which deserves thorough consideration and investigation. For this reason, Mr. Marris's attempt to analyse the problem in quantitative terms is very much to be welcomed. Any considered judgment on this method of analysis, and the plausibility of the results which he obtains, must await a consideration of the paper which he refers to. My initial impression is that the model which he uses is unsatisfactory, and that consequently little significance can be attached to the equations which he uses for predictive purposes. The hypothesis that the terms of trade can be regarded as a function of the volume of exports seems to me too over-simplified to be at all satisfactory, and for this reason the high correlation in the inter-war period, to which he attaches considerable importance, may in fact be misleading. To put the same point in another way, the economic structure which generated the time-series which he uses is not the structure of his model, and the use of this series for deriving his regression equation is therefore highly suspect—

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[1] Though his later reference, in an entirely different context, to the advantages which the United States derives from 'abundant capital and rapid technical progress', may perhaps be interpreted as an implicit concession to this argument.

as is the application of an equation of this type to the present situation. In consequence, I am not much impressed by his rather pessimistic projections,[1] which certainly do not in themselves provide an adequate basis for decisions of economic policy.

(*b*) *Economic growth as an objective of policy*

It would be hopeless to attempt a full assessment of this problem, and I shall therefore merely make a number of rather loosely related comments on some of the arguments which have been put forward.

(i) Mr. Marris suggests that I attach too much importance to increases in output, as opposed to an increase in leisure, and that this is rather an austere and cheerless programme.

Pursue,
Ye sons of Albion, with unyielding heart,
Your hardy labours.

This interpretation, though it is entirely consistent with what I wrote, does not in fact represent my view. My argument was badly expressed, and I should have made it clear that the objective which I regarded as desirable was a high rate of growth of *productivity*.

(ii) Even given the construction which Mr. Marris justifiably places on my remarks, I do not think that it is a fair inference that I advocate Strength through Misery : but this accusation may fairly be made against Mr. Seers. The argument that higher material standards may be a cause of strategic weakness certainly merits consideration, but I feel that Mr. Seers may be attaching too much importance to it. Surely in this matter what is done can be undone, and a large and rapid reduction in imports could be made if the need for it, for strategic reasons, were generally recognised ?

(iii) Mr. Johnson writes that ' if a society does not place a high value on the material results of growth or the social conditions required to produce rapid growth, there is no reason for viewing a low rate of growth in that society with alarm '. I have three comments to make in connection with this.[2] First, the argument seems to assume that there is a unique set of social conditions—presumably those of contemporary North America—which is necessary for economic growth; and this is exceedingly dubious. Second, it seems evident that British society, for the present at least, *does* attach considerable importance to ' the material results of growth '. Third, it is quite true, as Mr. Johnson later points out, that higher material standards could be achieved, without any increase in output, by ' re-assessing and limiting the country's role in international affairs '. On the other hand, it might be argued that the main immediate reason for wanting a high rate of growth is that it may enable higher material standards to be attained without condemning the United Kingdom to a passive and futile role in international affairs.[1]

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[1] There seems to be a remarkable divergence of views on this subject in Cambridge. In a recent paper in the *London and Cambridge Economic Bulletin* (published in the *Times Review of Industry*, December, 1954), Messrs. A. A. Adams and W. B. Reddaway consider the prospects for output and the standard of living over the next twenty-five years. In a table headed ' Hypothetical Calculations for Changes between 1954 and 1979 ', they assume, on the basis of recent experience, an increase in the gross domestic product of 80 per cent over this period, They also assume that any adverse change in the terms of trade which may occur may be expected to be approximately cancelled out by a rise in net income from abroad, so that ' changes in these external factors as a group may be ignored in comparison with changes in production '.

[2] In passing, I should like to deny having fallen into the ' masochistic tendency ' to which Mr. Johnson refers. It is of course true that the rate of growth in the post-war years was remarkably high. I was concerned only to point out that it appeared to have been low from about the middle of 1951.

(iv) A high rate of economic growth is, in my view, an essentially subordinate aim of policy, which should be pursued not for its own sake, but as a means to certain ends. A preoccupation with the problem of how to achieve it may easily lead to a confusion of the means with the ends, as some contemporary discussions of ' the question of incentives ' show; at its worst, it may engender what Professor Tawney has described as ' a contempt for all interests which do not contribute obviously to economic activity '.[2] Moreover, it is easy to think of policies and circumstances which would probably be favourable to growth, but which might be regarded as highly undesirable because of their other effects.[3] These reservations should no doubt have been made in my article.

I conclude this section, somewhat arbitrarily, by reasserting my view that, subject to these reservations, a high rate of growth *does* appear to be a desirable objective of policy. The reader who does not sympathise with this attitude may prefer to omit the following section, which is essentially concerned with some of the means to attaining this objective.

3. Investment Policy

It is convenient to begin by considering once again why industrial investment in 1952, and more particularly in 1953, was not higher. In itself, this is a question of only subsidiary importance, and I have nothing new to say about it; but the answer which one gives to it is relevant to the more important question of whether this rate of industrial investment was adequate.

Mr. Leyland argues that shortages of finance may have been an important factor in limiting investment plans; ' on this,' he writes, ' the evidence can lead only to agnosticism.' I am unwilling to accept this judgment. What evidence there is—admittedly it is fragmentary and inconclusive—lends support to my interpretation rather than his. It is true that any generalisation on this topic must necessarily be rather impressionistic and subject to qualification, but this does not mean that one conclusion is as plausible as another. I do not deny that there may have been cases where shortage of finance was a decisive factor; but I see no reason to qualify my judgment that, over the economy as a whole, it must have been of relatively small importance. On this matter, I share Professor Lewis's view that ' businesses are not investing more because they can meet the demand adequately and profitably with their present plans '.[1]

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[1] This argument depends of course on the judgment that British influence in international affairs is likely to be beneficent.

[2] R. H. Tawney, *The Acquisitive Society* (Bell ; twelfth impression, 1943, p. 45).

[3] Though it is not the case that social and economic policies designed to encourage growth must necessarily be regarded as obnoxious in other respects ; some of them might well be favoured on other grounds.

I turn now to the first question which Professor Lewis raises, that is whether the rate of investment in this period was too low. It is regrettable that I failed to consider this question more fully and explicitly, and that in consequence I gave the impression of believing that the answer was obvious. In fact, I agree entirely with Professor Lewis's conclusion, that ' it is cerainly arguable that the rate of investment in this country is too low, but it is not self-evident '. It is never easy to decide, even approximately, what would be an appropriate rate of investment, particularly in an economy in which there is virtually no unemployment. In my view, however, there are reasons for believing that, at any rate until very recently,[2] the rate of industrial investment probably was, if anything, too low. Before considering these reasons, however, I have one comment to make on the argument which Professor Lewis puts forward in this connection.

As I have said, I agree with his view that the rate of investment has not obviously been too low; but I am unimpressed by the reason which he gives for holding it. His comparison of the ratio of investment to gross national product in this country and the United States does not justify any conclusion whatever.[3] It could only do so if one accepted the extremely arbitrary and questionable assumption, that a rate of industrial investment which enables this country ' to achieve the same proportionate deepening of capital ' as the United States is in some way appropriate. I can see no good reason for adopting this particular criterion for assessing the adequacy of a given rate of investment, except that it is simple and comparatively easy to apply. The alternative which I offer has neither of these virtues.

This alternative criterion is whether the current rate of investment appears to be consistent with what is regarded as a satisfactory rate of growth. My argument, therefore, that investment has probably been too low; rests on the belief that its level may have been consistent only with an unnecessarily and undesirably low rate of growth, while a higher rate of growth would have required a higher rate of investment to induce and sustain it. Even granted, however, that a higher rate of growth would be desirable, it is not in the least obvious that investment has in this sense been inadequate; there is too little evidence to justify anything more than a tentative conclusion. Nevertheless, such evidence as there is deserves to be considered, and it is certainly consistent with the view that some stimulus to investment is justified.

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[1] This may not be altogether true at present ; for it is possible that some investment plans are now being held back, or carried out more slowly than would normally be the case, because of physical shortages—especially of labour. During most of the period under discussion, however, physical shortages were not apparently of much importance.

[2] This qualification is inserted because I have not attempted to estimate or evaluate the changes which may have taken place since my article was written. It is not meant to imply that the present situation is quite different.

[3] Incidentally, unless my arithmetic is wrong, Professor Lewis's percentages are (for 1952 and 1953) unduly ' favourable ' to this country. It may be added that, in general, too much significance is attached to this particular ratio, especially in making international comparisons. For some purposes, it may also be interesting and relevant to compare the *per capita* figures for investment. Such a comparison has been made for the year 1950, and the results suggest that in that year *per capita* investment in ' producers' durable equipment ', in real terms, was about 2.5 times as high in the U.S. as in this country. The corresponding ratio for non-residential construction was about 4 to 1. (*Vide An International Comparison of National Products and the Purchasing Power of Currencies*, by M. Gilbert and I. B. Kravis, O.E.E.C., 1953.)

One reason for holding this view is that in some sectors of the economy the rate of investment seems to have remained at a low level for the past fifteen years, and not, as yet, to have recovered. The most obvious examples of this—they may be the only important ones—are the roads and the railways. In these cases, investment projects which would apparently yield a high rate of return have been neglected or postponed, largely because of physical restrictions. It is certainly arguable that a higher level of capital expenditure has become overdue; and the execution of the railways' new programme of development, together with a higher level of expenditure on road construction and improvements, would mean a quite substantial increase in the present total of industrial investment.

These are exceptional cases, however, and some more general argument is required in order to justify a stimulus to all forms of industrial investment, such as the investment allowances have provided. I think that such an argument can be found, though its applicability to the present state of the British economy may easily be questioned.

Essentially, the argument depends on three assumptions : first, that the rate of investment is considerably influenced by expectations concerning future sales; second, that in conditions of full employment, output cannot increase at a faster rate than productivity; and third, that an increase in investment—at any rate if it is associated with a rise in the ratio of investment to total expenditure—will cause productivity to increase at a higher rate. In so far as these assumptions are realistic, the rate of growth will depend to some extent on the view which businesses take about future changes in demand. If for any reason they tend to take a cautious view, so that the representative business considers that its sales over a period of years are not likely to rise appreciably, then this will in itself, through its effect on investment, cause the rate of growth of output to be relatively low. Conversely, a low rate of growth will tend to confirm the business world in its caution, so that this state of affairs may be perpetuated.[1] If, however, some means were found to increase investment in such a situation, this increase would tend to raise the rate of growth. In time, the process of expansion thus initiated and maintained by the new investment policy would be increasingly taken for granted, and expectations would change accordingly; the new rate of growth in its turn would become partly self-sustaining. But without the initial impetus the process of expansion might never begin. If, therefore, there were reasons for supposing that the rate of investment in any period was the outcome of an unduly pessimistic assessment of future prospects, there would be a strong case for encouraging investment as a matter of deliberate policy.

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[1] This argument has an obvious affinity with that developed recently by Mr. Kaldor (*vide* 'The Relations of Economic Growth and Cyclical Fluctuations', *Economic Journal*, March 1954); but it is a very much cruder argument than his, and it is put forward in connection with a rather different problem.

This appears to be the main justification for trying to raise the rate of industrial investment in the United Kingdom. The investment allowances may be interpreted as an attempt to induce British industry, in the Chancellor's phrase, to ' invest in success '. Whether such measures are appropriate depends on two things : (i) whether the general argument set out above is intrinsically plausible, and (ii) whether there is reason to believe that in recent years the rate of industrial investment has been based on an unjustifiably low estimate of the potential rate of growth of the economy.

Let us first consider the general argument. Is it reasonable to suppose that the rate of growth will be much affected by expectations concerning itself? Of the three assumptions which this thesis requires, the second needs no defence; provided that there are no significant changes in the total working population, and full employment (in some sense) is maintained, output can increase only in so far as productivity increases.[1] The other two assumptions cannot of course be justified so easily; and though they are certainly plausible—since it is hard to believe that investment decisions are uninfluenced by expectations concerning future sales, or that changes in productivity are independent of investment—this is not enough. If sales prospects are only one influence, among many others, on investment decisions, and if the rate investment is a comparatively minor factor in determining the rate at which productivity increases, then the argument loses most of its importance. The rate of growth in these circumstances would be almost entirely determined by other forces. If the argument is to be taken seriously, each of these two influences must be of great, if not predominant, importance.

How important they in fact are is a matter of judgment. In so far as the object of investment is to increase productive capacity, there can be little doubt that anticipated changes in demand are of overwhelming importance; but it may be doubted whether they are so important when capital expenditure is undertaken in order to reduce costs—and it is investment of this type which is mainly relevant to the argument. However, these two effects of investment cannot easily be separated. New capacity is likely to be associated with more efficient methods; and for reasons which are more conveniently considered later, increases in capacity and in productivity may be related in another less direct way. Moreover, cost-reducing innovations are more likely to be introduced if demand is expected to rise : whether or not new equipment is worth installing depends partly on how far it is expected to be utilised to capacity. Finally, it is obvious that increases in productivity may in some cases be achieved with little or no capital expenditure; but it is generally agreed that there is a close connection between investment and productivity growth. For these reasons, it seems to me that the argument that the expected rate of growth may have an important effect on the actual rate cannot be dismissed. It has no obvious implications for economic policy, however, unless there are grounds for thinking that expectations concerning the rate of growth have a pessimistic bias.

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[1] The argument could be generalised in order to allow for the possibility of changes in the working population, but this is unnecessary for the present purpose.

It certainly cannot be demonstrated that this has been the case. It seems clear, however, that industrial investment has remained, since about 1950, at a level which appears to be low when compared with that of other countries. This has occurred in spite of the destruction and neglect of fixed assets during the war, the rapid post-war growth of output and the need which this created for increases in capacity, the existence of a variety of physical restrictions and limitations during the period from 1945 to 1952, and a high general level of profits together with (from 1952 at least) favourable conditions for borrowing. It would be surprising if this failure of investment to increase, after the removal of restrictions upon it, had not been connected with a general impression that ' the post-war boom ' had come to an end, and a feeling that it was prudent to pause, and to think even more carefully than usual before undertaking any substantial piece of capital expenditure. It must be remembered also that the experience of the inter-war years may in many cases have had more influence in determining investment decisions than is justified under present conditions. On the whole, it seems likely that the potential growth of output and demand has been underestimated rather than overestimated.[1]

This summary sketch of the argument for encouraging industrial investment is virtually completed,[2] but one or two post-scripts are needed. First, it is necessary to consider the case for increases in capacity as such. The arguments which I advanced in my article considered this question only in relation to the balance of payments, and they require restatement in the light of the above argument and the comments which have been made by Mr. Johnson and Mr. Marris.

First, I do not advocate the creation of excess capacity as such. This disclaimer is not mere pedantry, nor the result of an undue preference for euphemism. My argument is not that large reserves of capacity should be deliberately created. It is that if investment plans are based on a cautious assessment of future prospects, then any unexpected increase in demand will create shortages and bottlenecks, and that these will persist for some time, since to increase capacity—particularly in the industries which use large amounts of capital per unit of output—takes an appreciable period. While they continue, such shortages are likely to have a harmful effect on the balance of payments, and possibly also on the rate of investment and the rate of growth of output. There is therefore a case for encouraging the expansion of capacity in order to reduce this risk. It is true that such a policy itself involves the risk of creating unused capacity, but in my judgment this is, in the present circumstances of the British economy, a less serious danger.

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[1] This judgment is confirmed by the fact that when investment programmes have been explicitly based on forecasts of demand, these forecasts have in general been over-cautious. (Cf. C. A. R. Crosland, ***Britain's Economic Problem***, p. 115) .

[2] Except for an extremely important qualification, the implications of which cannot be considered here. The whole of the above argument has been stated in terms which imply that each firm's estimates of its future sales will depend on its estimate of the growth in demand for the products of the industry of which it is a member. In many cases, however, they will depend also on an assessment of how far it can hope to increase its share of the market at the expense of its competitors. Where this is so, the argument is seriously incomplete without some discussion of the effects of different competitive relationships between firms. (Cf. the article by Professor Domar on ' Investment, Losses and Monopolies ', published in *Income, Employment and Public Policy* : *Essays in Honor of Alvin Hansen*, Norton, 1948).

This argument may be considered first in relation to the comments which Mr. Johnson has made. He first suggests that it would be less costly and more rational to insure against the risk of a possible worsening of the balance of payments, caused by limitations of productive capacity,[1] by enlarging the gold reserves. It is hard to see why he regards this as a suitable alternative. In principle, there are four obvious methods of increasing the reserves to a level which would provide adequate insurance. They are : (i) raising tariffs, in disregard of our international obligations and at the risk, therefore, of provoking immediate retaliation; (ii) imposing more severe quantitative restrictions, at the cost (to use Mr. Johnson's phrase) of ' a sacrifice of the advantages of liberal trading policies '; (iii) devaluing, which on Mr. Johnson's own arguments in connection with the terms of trade would presumably cause an appreciable loss of real income; or (iv) a substantial reduction in demand and output, which would more obviously have the same result. These considerations, however, are incidental. The main point is that the extent to which the reserves can be increased is largely outside the control of this country. It depends on (i) the increase in the world supply of gold and dollars, and (ii) the readiness of other countries to lose reserves, or at least to abstain from attempts to increase them. Clearly these cannot be taken for granted.[2] For this reason, the enlargement of the gold reserves is not in fact so simple an alternative as Mr. Johnson implies.

His main argument, however, is that this particular danger to the balance of payments can be met by means of alterations in the exchange rate, and he is entirely justified in stating that I should have given this suggestion proper consideration. Given the coincidence of ' cost-determined ' export prices and ' demand-determined ' import prices, the case for a flexible exchange rate is in principle a strong one, and I regret having implied that the objections to it—which I failed to specify—were necessarily fatal. I do not in fact hold this view. It does seem to me, however, that there are difficulties in making use of the exchange rate for this purpose which may well be very serious. It should be remembered that the situation which is postulated is one in which the demand for British exports has outrun the available supply, but export prices are not rising correspondingly. In these circumstances an appreciation of the exchange rate is called for ; but since the balance of payments is likely to be unfavourable, the attempt to achieve and maintain a higher rate may meet with strong speculative resistance, based on the view that an adverse balance of payments will lead to a fall in the rate. It may be argued that once this resistance has been overcome, the higher rate will itself improve the balance of trade, and thus cause speculative expectations to change: but even this is not certain. It is possible that foreign customers may regard the new rate as a temporary one, and therefore postpone orders in the hope of being able to buy later on more favourable terms. Thus even if a higher rate is successfully established, it is possible that the demand for exports may suffer because this rate is not expected to last.[1] It cannot therefore be assumed that variations in the exchange rate will provide the flexibility that is needed; and unless this assumption is made, the case for expanding capacity remains a strong one.

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[1] It may be noted that these limitations will not only affect the supply of exports, but may also give rise, as they have done in recent years, to increases in import requirements.

[2] Especially in the present state of international liquidity. It is most remarkable that no action has yet been taken to remedy the fatal weakness of the International Monetary Fund, by creating much larger currency reserves which countries may use for meeting temporary deficits.

My whole argument may be summed up as follows. Many businesses are understandably cautious about increasing productive capacity, because of the risk that it will not be fully utilised. They will tend to expand only when demand exceeds the existing capacity by a substantial margin, and perhaps only after this excess has prevailed for long enough for it to appear permanent. If this policy is generally pursued, it may tend, for reasons already given, to slow down the rate of increase in productivity. Further, it will mean that any unexpected increase in demand—and if the potential rate of growth is under-estimated, such increases may be frequent—will at once come up against capacity limitations. If the increase is in the demand for exports, then the balance of payments will suffer; and it may do so even if the increase is in home demand, since the existence of capacity limitations will cause import requirements to increase. Unless this threat to the balance of payments can be averted by manipulation of the exchange rate, some other expedient must be found in order to prevent a serious fall in the gold reserves. Past experience suggests that, given the composition of British exports, restrictions on home investment would probably be one such expedient; and recurrent restrictions of this kind may hamper long-term adjustments, and will probably slow down the rate of growth. For these reasons, it seems prudent to anticipate future requirements of capacity, on the basis of fairly optimistic assumptions about the rate of growth.

My second postscript concerns the distribution of investment. Mr. Johnson suggests that preference should be given to investment which will have the effect of reducing imports, and also to investment abroad. This would be justified if (i) economic expansion would have a very unfavourable effect on the terms of trade, or (ii) the long-term trend of the terms of trade is likely to be adverse in any case. I have nothing to say about the second possibility. As to the first, I have already suggested that Mr. Johnson's view may be unduly pessimistic, and in view of this, and bearing in mind the various ways in which import-substitution is already encouraged, it does not seem evident that an investment policy should attempt to discriminate between different kinds of home investment. With respect to foreign investment, there is the obvious disadvantage that it imposes an immediate strain on the balance of payments, especially if it leads to an increase in dollar expenditure. In order to prevent the reserves from falling (or other forms of external debt from rising) as a consequence of a higher rate of foreign investment, it would be necessary to bring about an improvement in the current account balance; thus the immediate effects on the terms of trade, on Mr. Johnson's own assumptions, might be very unfavourable.[1] This aspect of the matter surely cannot be ignored.

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[1] *Cf.* the discussion by Professor Nurkse, in the final chapter of *International Currency Experience* (League of Nations, 1944), in which he concludes that 'exchange variations are certainly an unsuitable and undersirable means of dealing with short-term discrepancies in the balance of payments.'

Finally, this seems as appropriate a place as any to consider Mr. Marris's contention that I have fallen into ' methodological ' confusion. As an illustration of this, he quotes the fact that I considered the effects of policies designed to alter the level of effective demand, in the same context as what he describes as ' two clearly long-term propositions '. But this seems to me entirely defensible. The main reason for advocating a more or less permanent state of excess demand, or alternatively, the maintenance of a reserve of unemployed labour, is in each case a belief that this will enable a higher rate of growth to be achieved. Each of these policies may be regarded as a ' long-term ' alternative to the present policy, which aims at minimising unemployment while avoiding excess demand.[2]

If it is granted that there is a case for stimulating investment, the question arises of what is the most appropriate means of doing so. Professor Lewis's recipé is to increase demand—perferably, there should be an increase in the demand for exports. He admits that an increase in demand would have inflationary results, but this does not perturb him. In any case, ' the acceleration of investment programmes to higher levels always brings some initial inflation.'

I am not convinced that Professor Lewis is justified in his tranquil acceptance of the prospect of inflationary pressure. It is true that on his assumptions the balance of payments would be unaffected; and it can be argued that the probable internal consequences of excess demand are not such a very serious matter.[3] But will an increase in demand—whether it is caused by a rise in exports, a fall in taxation rates, or an increase in government expenditure—necessarily lead to an increase in investment in real terms? If, for instance, the volume of exports increased substantially, as Professor Lewis would like it to do, then in present circumstances some other component of final demand would certainly have to be reduced, though not perhaps by an equivalent amount. Why should it not be investment that suffers ? It may be true that a higher rate of investment ' brings some initial inflation '; but this is not the point. The point is whether an initial inflation will bring (in real terms) a higher rate of investment. I do not see that this will necessarily happen. It is true that if demand exceeded supply some busnesses might *attempt* to invest more; but in an environment of general shortages of labour and materials it is quite possible that their attempts would be frustrated.

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[1] This tendency would be weakened, however, in so far as the investment itself created a demand for British exports, and strengthened trading connections with this country.

[2] In this same context, I cannot understand Mr. Marris's objection to my treating the effects of productivity growth on the balance of trade as ' long-run problems '. What is relevant here is the secular rate of growth. not year-to-year changes.

[3] This is the most appropriate place to refer to Mr. Johnson's remark that my analysis of the effects of inflationary pressure on the balance of payments neglected the effect on imports. It is true that I did not consider this problem ; but I do not accept his implication that in recent years changes in the propensity to import have mainly resulted from changes in inflationary pressure. They can be more plausibly .accounted for by changes in (i) the severity of quantitative import restrictions ; (ii) the rate of addition to stocks of imported goods, resulting from strategic decisions and speculative price-expectations ; and (iii) the relationship between domestic productive capacity for certain commodities—notably coal, steel and engineering products—and the demand for these. None of these factors was very closely related to changes in inflationary pressure.

For this reason, it seems to me that some more direct encouragement to investment is called for—an attempt to raise the ratio of investment to total final demand. There are of course many possible ways of setting about this; I discussed them in my article only in a very superficial way, and I have only a few general comments to add now.

First, Mr. Leyland's remarks leave me unconvinced that a reduction of taxation on profits is likely to be the most effective way of stimulating investment. He does not consider my main argument, which is simply that, in some instances at least, ' the fear of loss is more powerful than the hope of gain '.[1] In so far as higher retained profits would reduce the former, their effect in increasing the latter would be at least partially offset.

Second, I am sympathetic to what Mr. Kennedy says about obsolescence and innovation, but I am not very clear what instructions he wishes to give to the ' Government groundsman '. Also, I am surprised that he should regard such comparatively recondite arguments as being required in order ' discredit the too simple use of " cost and price " as a test of industrial efficiency '. It is legitimate to use this test for comparative purposes only if the firms or industries which are being compared are confronted with the same input prices. This will almost never be the case with international or intertemporal comparisons; and where it is not the case, output per man-hour is generally a superior (though admittedly unsatisfactory) indicator.[2]

Third, I should like to repudiate any suggestion that I regard private savings as in some way undesirable; it is hard to see how any person of even moderate intelligence could hold this opinion. Certainly I argued that in itself an increase in private savings would do little or nothing to encourage investment, and might easily have the opposite effect;[3] but since such an increase could be accompanied by, and would indeed provide a justification for, a reduction in rates of taxation, there is no ground for being apprehensive of it.

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[1] Joan Robinson, *The Rate of Interest and Other Essays*, Macmillan, 1952, p. 36.

[2] If, however, we are concerned with comparing two alternative *techniques* in a given period, then unit costs obviously provide a better criterion for deciding between them than output per man-hour

[3] This will partly depend on whether the increase is in personal savings or whether it takes the form of a rise in undistributed profits.

Fourth, I admit that a substantial increase in investment might create inflationary conditions, and that my remarks on this subject were expressed in a rather misleading form. Professor Nurkse considers that my paper was ' imbued with a belief in the expansibility of output even under conditions of full employment '; but I think it is fair to point out that in the earlier part of the paper I emphasised that there was little reason to suppose that there was any substantial reserve of unemployed or under-employed labour, and that a more generous Budget would very probably have led to the creation of excess demand. My main arguments were simply (i) that the ' full-employment ceiling ' is not a very precise and rigidly defined concept, so that even if there is very little unemployment it may still be possible for the economy to meet some increases in demand ; and (ii) that in so far as productivity is rising, this ' ceiling ' should be thought of as having an upward slope, so that potential output is rising over time.

In this connection, both Mr. Worswick and Professor Nurkse seem to have misinterpreted my reference to a hypothetical increase of 25 per cent in industrial investment. I did not suggest that such an increase was necessarily desirable, nor that if it were to occur it would not create inflationary pressure. What I said was that *even if* such an increase occurred, its absolute amount would only be of the order of £350-400m. per annum, and that ' the kind of increase which seems likely to be achieved ' would probably not give rise to inflationary pressure. This latter judgment was based on the view that the increase which would result from the introduction of the investment allowance would be considerably smaller than 25 per cent. Given that productivity is increasing over time, and at a rate which may be partly dependent on investment, there did not seem to be a convincing case for imposing higher rates of taxation in the expectation that a rise in industrial investment would create inflationary pressure. So far as one can judge, the events of the past six months or so are consistent with this view.

Finally, I did not make any very specific recommendation about how, and to what extent, investment should be stimulated; I did not argue, for example, that firms ought now to be allowed to write off all their capital expenditure in the year in which it is undertaken. This caution was deliberate. The argument in favour of encouraging industrial investment in this country seems to me to be fairly convincing, but by no means conclusive; and even if the argument is accepted, it is impossible to say how great an increase in investment is needed, or what measures of policy will ensure the achievement of this increase. Precise recommendations would presuppose a number of political assumptions and a great deal of evidence which we do not possess. Given that it is so hard to say what rate of investment might be appropriate, and that any very substantial immediate increase might easily have inflationary results unless it were accompanied by higher rates of taxation, it is by no means evident that more drastic immediate measures are needed.

4. CONCLUDING REMARKS

From what I have said above, it will be apparent that I am impressed by many of the adverse criticisms which have been made of my paper. In particular, I now think that many of my arguments were incautiously or inadequately stated, or were dependent on assumptions which were not explicitly specified and defended.

At the same time, it is clear that many of the arguments which have been used against mine are quite inconsistent with each other, so that in many cases the authors' disagreements with me are far less serious than their disagreements among themselves. The various contributions disclose a remarkably wide dispersion of opinions. Further, I remain unrepentant in believing that the main conclusions which I reached—such as they were—are plausible. For the most part they are extremely tentative, and it is quite possible that new evidence and further consideration will weaken or discredit them; but I hope that the comments which I have made in this paper will at any rate cause them to appear less unacceptable.

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THE SAVINGS SURVEY 1953

RESPONSE RATES AND RELIABILITY OF DATA

By T. P. Hill, L. R. Klein, and K. H. Straw

This article gives some preliminary results of the second National Survey of Personal Incomes and Savings, carried out in April and May 1953. *This Survey, like the first, was organised by the Institute of Statistics in co-operation with the Social Survey. Mr. H. F. Lydall was responsible for the Survey, and was assisted by Mr. R. F. F. Dawson, Mr. M. R. Fisher and Mr. T. P. Hill. Mr. J. E. Fothergill, of the Social Survey, was in charge of the interviewing and the tabulation of results, and contributed greatly to the planning and analysis of the Survey. Mr. Lydall is at present on leave. The authors of this article have benefited from his work, and wish to acknowledge their indebtedness to him.*

A third National Survey was carried out in April and May 1954, *and the results will be published in due course.*

The second Survey gives an additional sample picture of the British consumer and his finances.[1] Since these sample surveys are pioneering attempts to obtain elusive statistical information, and since changes are constantly occurring in a dynamic economy, it is necessary to take repeated snapshots of the consumer sector and report in some detail on the findings at each stage of analysis.

The plan of this first article on the 1953 Survey is to consider in Part I an analysis of response rates, including a comparison with response in the 1952 Survey; in Part II the changes in several distributions of demographic and economic variables between the two Surveys; and in Part III the agreement between Survey data and comparable statistics drawn from external sources. In an appendix there follows a summary of changes in survey techniques compared with 1952.[2]

I. Analysis of Response Rates

In 1952, interviewers turned in 2,598 completed questionnaires from respondents, while only 2,104 completed questionnaires were turned in for 1953. This fact underlines the need for a study of changes in the response of consumers to the interviewing efforts and, indeed, a general analysis of the factors responsible for non-response in any given year.

Among the various types of errors to which the Savings Survey data of 1953 may be subject one of the most serious is that arising from the relatively low response rate achieved. The latter may be defined as the percentage of income units[1] in the sample from which successful interviews were obtained —the criterion of success being that satisfactory information was obtained about the income unit's income. The response rate in this Survey was 66.1 per cent.[2] This is lower than desirable, even for surveys of this type, and it represents a marked deterioration from the previous year's survey when the response rate was 75 per cent. The response achieved in the lower stratum (68.9 per cent) was considerably higher than that in the upper stratum (46.4 per cent)—both these rates being about 10 percentage points lower than in the preceding year.

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[1] For detailed reports of the 1952 Savings Survey see the articles by H. F. Lydall in the Bulletin, Vol. 14, Nos. 11–12, pp. 369–92 ; Vol. 15, Nos. 2–3, 6–7, 10–11, pp. 35–84, 195–236, 341–401 ; Vol. 16, Nos. 4 (with R. F. F. Dawson), 7–8, pp. 97–129, 197–244. See also an article by R. F. F. Dawson, Bulletin, Vol. 15, No. 5, pp. 177–191.

[2] See Bulletin, Vol. 16, Nos. 7–8, 1954, pp. 197–244 for a discussion of the methods of the 1952 Survey. Techniques and sample design were essentially the same in 1953, but the sampling rate in the upper stratum (rateable value £30 and over) relative to the lower stratum (rateable value under £30) was increased, in 1953, from 5:1 to 8:1.

With such a large proportion of non-respondents, the possibility must be faced that serious biases may be introduced into at least some of the Survey's results. However, in combining the successes for the two strata, the data were weighted on the basis of the different response in the two strata as well as the different sampling fractions employed, so that to some extent the effect of non-response is mitigated. In effect, this standard procedure treats non-respondents like the average respondents in the same stratum and may still leave serious biases if the response obtained from particular types of income units is very low.

Types of non-response

In order to be able to assess the reliability of the Survey's results, it is essential to know whether or not the response rate varies between groups of income units with different economic or demographic characteristics. In other words, have we grounds for believing that non-respondents cannot be treated as a random sample of the population at large? For certain types of failures, namely rateable unit and household failures, we are automatically precluded from examining this question, since in these cases it was not possible even to identify the income units. Sometimes the interviewers were completely unable to contact any of the persons living at a rateable unit, even after repeated calls, or they encountered a flat refusal to impart any information whatsoever. Out of a total of 2,377 rateable units in the sample,[3] there were 223 such rateable unit failures. They accounted for 5.0 per cent of the total rateable units in the lower stratum and 13.7 per cent of the upper stratum, the proportion of such failures being strongly correlated with rateable value. The weighted figure for the sample as a whole after pooling the two strata was 6.1 per cent of the total rateable units. By comparison, the household failures were negligible, although they too were correlated with rateable value. Household failures occurred where a particular household within a rateable unit was identified but, for reasons similar to those above, none of the income units within that household could be identified.

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[1] An income unit consists of a single person aged 18 or over, or of a married couple. Children under 18 are included in the income unit of their parents or guardians. The income unit is the elementary unit for the Survey.

[2] This figure like all subsequent ones, unless specifically stated to the contrary, is obtained by pooling the two strata after giving failures and successes in the lower stratum eight times the weight of those in the upper stratum because of the different sampling fractions used.

[3] Originally, 2,518 rateable units were drawn, but the interviewers found that at 141 of these there was no private dwelling, so that by definition they were excluded from the sample.

Since we have defined the response rate in terms of income units, it is necessary to estimate the number of income units in the rateable unit and household failures. Assuming that the average number of income units per rateable unit or household was the same for the failures as the successes, the proportion of rateable unit failures must be the same as the figure 6.1 per cent given above, the proportion of household failures being 0.8 per cent. Income unit failures—*i.e.* where the income unit was successfully identified and, in most cases, contacted—account for the balance of the failures and amount to 27.0 per cent of the (estimated) total income units in the sample. Alternatively, we can say that 18 per cent of the failures occurred at the rateable unit level, 2 per cent at the household level, and 80 per cent at the income unit level.

Reasons for non-response

In addition to examining the type of failure, we are in a position to consider in every case the reasons for failure. These may be classified under three broad headings. Firstly, there are the direct refusals, including for our purposes those who gave some information on assets or savings but refused to divulge their income. Secondly, there are the non-contacts, comprising those who are always out or away,[1] or are too old or ill to be interviewed. They also include a few cases where some other person, usually the head of the household, refused the interviewer access to the income unit in question. Lastly there are the editing failures: for some income units, the interview was apparently completed satisfactorily but a close scrutiny of the schedule at the editing stage of the survey revealed inconsistencies or inadequacies which rendered the schedule unacceptable.

TABLE I

Reason for Failure according to Type of Failure

Reason for failure	*Rateable unit failure*	*Household failure*	*Income unit failure*	*All failures*
Direct refusal	65	74	64	65
Non-contact	35	26	33	33
Editing failure ...	—	—	3	2
Total	100	100	100	100

Approximately two-thirds of the failures were due to refusals and one-third to non-contacts, editing failures accounting for only a tiny fraction of the total—and being confined of course to the income unit failures (Table I). It is interesting to see that these proportions are almost identical for the two principal types of failure (rateable unit and income unit) especially since it might be anticipated that non-contacts would predominate in the former.

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[1] Repeated calls, usually about four, were made before the interviewers abandoned any income unit as a non-contact.

The reasons for failure will figure prominently in the subsequent analysis as they help to explain a considerable part of the variation in overall response between different categories of income units.

We shall be forced to exclude the rateable unit and household failures from any further analysis as nothing is known about the income units comprising them other than the location and rateable value of the dwelling in which they are living. However, the interviewers were instructed to find out as much as possible about the principal characteristics of the income unit failures—their structure, and the age, sex and occupation of their heads. The interviewers were not always successful in this respect; for example, although they always knew the sex of the head, they were able to ascertain his or her occupation in only two-thirds of the income unit failures. Thus there is a response rate problem even in the analysis of the failures, but with the exception of age and occupation it is not of any magnitude. Since the subsequent analysis will be confined to income unit failures, we shall work with a modified version of the response rate which we define as the proportion of *identified* income units in the sample for which successful interviews were obtained. On this definition the response rate was 71.0 per cent (55.0 per cent in the upper stratum and 73.0 per cent in the lower stratum). Throughout the subsequent analysis it should be borne in mind that this response rate is necessarily rather higher than the true response rate because of the exclusion of the estimated income units in the rateable unit and household failures.

Some factors associated with response

There is a marked association between the response rate of identified income units and the rateable value of the property in which they are living (Table II). At first, the response rate falls off rapidly as rateable value increases, but it levels off at about 50 per cent for rateable values over £40 per year. It can be seen from Table II that this is not due primarily to any specific reason for failure as the incidence of each tends to increase with

TABLE II

Response Rates and Reasons for Failure by Rateable Value

Rateable value (£ p.a.)	*Percentages of identified income units which were:*				*Total*
	Successes (response rate)	*Non-contacts*	*Direct refusals*	*Editing failures*	
0—4	86.0	2.3	11.6	—	100
5—9	79.3	7.5	13.0	0.2	100
10—14	76.3	7.7	15.2	0.7	100
15—19	69.2	10.7	18.9	1.2	100
20—29	64.5	10.2	24.8	0.5	100
30—39	62.4	12.3	22.2	3.1	100
40—49	51.5	15.7	29.9	2.9	100
50—59	50.5	16.7	29.4	3.4	100
60—79	50.8	15.1	29.7	4.3	100
80 and over ...	48.4	18.7	30.8	2.2	100
Lower stratum ...	73.0	8.7	17.6	0.6	100
Upper stratum ...	55.0	14.8	27.1	3.1	100

rateable value. If rateable unit and household failures were to be included (rateable value being one of the two known attributes of these types of failure) the picture would not be altered, since, as we have already observed, the proportion of these failures is itself correlated with rateable value. The implications of this association between rateable value and response may be quite serious, since many of the most important variables in which we are interested in this survey—e.g. income, savings, asset holding and net worth—are themselves correlated with rateable value. However, by adjusting the weights for the two strata to allow for the difference in response between them, the potential bias in many of the Survey's results may be reduced.

Apart from rateable value, the two most important factors to be considered are the number of persons in the income unit and the occupation of its head. Response shows a marked improvement as the number of persons increases, as can be seen from the final row of Table III; but on closer examination, the explanation for this phenomenon is not so straightforward as it might first appear. Accordingly, we shall consider first the less complicated but no less important question of the influence on response of the occupation of the head of the income unit.

TABLE III

Response Rates[1] *of Identified Income Units by Number of Persons in Income Unit and Occupation of Head*

Occupation of head	*Number of persons in income unit*				*All sizes*
	One	*Two*	*Three*	*Four or over*	
Skilled manual...	82.4	80.3	91.1	95.5	87.0
Unskilled manual	74.5	87.8	86.3	91.7	84.3
Clerical and sales	85.0	80.7	84.0	98.5	85.4
Managers and technical ...	61.5	75.8	93.4	78.1	75.0
Self-employed	34.2	44.8	55.0	74.2	51.6
Retired and unoccupied ...	65.1	75.3	91.4	82.8	69.1
All occupations	62.6	69.1	82.1	87.2	71.0

[1] The percentage of income unit failures for which the occupation of the head was not ascertained was 33.6. The percentage for which the number of persons in the income unit was not ascertained was 1.8. Cf. footnote to this page.

The highest response occurs amongst income units whose heads are either manual workers or belong to the clerical and sales category (Table III).[1] This group as a whole accounts for about two-thirds of the income units in the sample. By far the lowest response was obtained from the self-employed. The response from the retired and unoccupied falls between these two extremes, while the response from the managerial classes is somewhat higher, but not nearly so high as for manual and clerical workers. This occupational pattern is not materially affected if we eliminate the effect of number of persons or rateable value. It can be seen from Table III that roughly the same pattern persists within each size of income unit, the principal departure being the relatively high response from managers and the retired in the three person income units. It was possible to allow simultaneously for the effect of rateable value by sub-dividing each of the four size groups into the two strata. The occupations were ranked in order of response within each of the eight groups so obtained and a statistical test of the similarity of the eight rankings proved to be significant at the one per cent level.[1] The most striking feature of the more detailed breakdown was the consistently low level of response from the self-employed.

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[1] The response rates shown in Table III give an exaggerated impression of the response achieved within each individual occupation. Because the occupation of the head was not ascertained for one-third of the income unit failures, these failures had to be excluded when calculating the response rates for individual occupations, so that the rates shown in Table III are to that extent higher than the true occupational response rates. It is, therefore, the relative rather than the absolute levels of response which are significant when the pattern of response by occupation is being considered. Similar qualifications apply to some of the other factors to be examined (age, sex, etc.) although the amount of upward bias in the response rates shown depends on the proportion of failures for which the particular attribute was not ascertained.

The effect of rateable value on response is apparently much more marked in some occupations than others, as can be seen from a comparison of response rates in the two strata shown in Table IV. Indeed, in the case of the self-employed and managers, and also the skilled manual workers, the difference in response between the two strata is very small; for the retired and unoccupied on the other hand, the difference is extremely pronounced. Moreover, the last column of Table IV suggests that some part of the explanation for the general deterioration in response as rateable value increases is that the self-employed account for a much greater proportion of the upper than the lower stratum, although it should be remembered that they carry a relatively small weight, even in the upper stratum.

TABLE IV

Response Rates by Occupation[1] and Stratum

Occupation of head	*Stratum*		*Combined strata*	*% of income units in upper stratum*[2]
	Lower	*Upper*		
Skilled manual	87.1	85.9	87.0	5.4
Unskilled manual	84.9	72.3	84.3	5.3
Clerical and sales...	87.2	70.4	85.4	10.6
Managers and technical	75.9	72.6	75.0	28.4
Self-employed	52.2	50.2	51.6	31.3
Retired and unoccupied ...	72.5	45.8	69.1	12.7
All occupations	73.0	55.0	71.0	11.5

[1] Cf. footnote p. 93, and the note to Table III.

[2] These percentages are based on the successes plus those income unit failures for which occupation was ascertained.

The relative importance of the three reasons for failure varied considerably among occupations (Table V). The poor response from the self-employed

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[1] This means that the probability of obtaining by chance so great a degree of similarity in the ranking of response by occupation among the eight subdivisions of the sample simultaneously is less than one per cent: *i.e.* that occupation not only exerts a systematic influence on response but does so independently of size of income unit and rateable value. For a description of the test used see: M. Friedman, 'The Use of Ranks to Avoid the Assumption of Normality Implicit in the Analysis of Variance', *Journal of the American Statistical Association*, Vol. 32, 1937. pp. 675–701.

TABLE V

Reasons for Failure by Occupation of Head of Income Unit

Occupation of head	*Percentages of identified income units which were:*				*Total*
	Successes[1] *(response rate)*	*Non-contacts*	*Direct refusals*	*Editing failures*	
Skilled manual...	87.0	2.5	10.5	...[2]	100
Unskilled manual	84.3	5.8	9.9	...	100
Clerical and sales	85.4	5.3	9.2	0.1	100
Managers and technical ...	75.0	6.8	17.6	0.6	100
Self-employed	51.6	5.7	34.7	8.1	100
Retired and unoccupied ...	69.1	13.2	16.4	1.4	100
All occupations	71.0	9.4	18.7	0.9	100

[1] Cf. footnote p. 93, and the note to Table III.

[2] ... indicates less than 0.05 per cent.

was due not merely to their low propensity to co-operate but also to an exceptionally large proportion of editing failures. Over one-half of the editing failures in the sample occurred amongst the self-employed, although this occupation includes less than five per cent of the sample. Roughly two-thirds of the self-employed editing failures resulted from inconsistencies and general inadequacies in the schedules while the remainder simply could not state their incomes with sufficient precision. As might be expected, there was an unusually high proportion of non-contacts among the retired and unoccupied, as many of these were too old or ill to be interviewed. In general, it is the wealthier sections of the community—the managerial and professional classes and, in particular, the businessmen and farmers—who have been the least co-operative. If we may use rateable value as a crude indicator of general economic status, it appears that for the remaining occupational groups, with perhaps artisans as an important exception, the poorest response has been obtained from the wealthier individuals. This seems to be especially the case for the retired and unoccupied for whom there was a marked contrast between the response in the two strata. The low response from the self-employed is particularly serious, not only because their average income and wealth are considerably above those for the population as a whole, but because their contribution to total saving in the form of retained profits or business saving is very significant. Moreover, it should be remembered that the marginal effect on some of the Survey's estimates of a low response from a small but wealthy minority may be quite substantial in view of the known inequalities in the distribution of income and especially assets.

It has already been pointed out that there is a strong correlation between response and the number of persons in the income unit. This relationship is quite independent of those between rateable value and occupation and response. If we rank the response rate for different sizes of income unit within each occupation and stratum, a test of the agreement between the twelve rankings so obtained is significant at the one per cent level. It was noticeable that the effect of the size of income unit was apparently most pronounced for the self-employed (*cf.* Table III).

The most obvious explanation for this relationship is that the larger the income unit, the greater the likelihood that the interviewer will be able to contact at least one of its members.[1] In fact, the difference in response between single person and larger income units is entirely due to a difference in the proportion of non-contacts (see Table VI). The individuals comprising the single person income units tend to be either young and unmarried or elderly widows or widowers. The former are frequently not at home in the evenings when most of the interviews take place, while the latter are frequently too old or ill to be interviewed. Single person income units of this type are often ' secondary ' income units[2]; indeed, the difference in response between secondary and primary income units (12.4 percentage points) is very nearly the same as that between single person and larger income units. Since most cases where access to the income unit was refused by some other person are secondaries, and since the great majority of the latter are single person income units, we have an additional factor to explain the large proportion of non-contacts amongst single person income units.

TABLE VI

Reasons for Failure by Number of Persons in Income Unit

Size of income unit	*Percentages of identified income units which were :*				*Total*
	Successes (response rate)	*Non-contacts*	*Direct refusals*	*Editing failures*	
Single person	62.6	17.3	18.9	1.2	100
Two or more persons	77.5	3.7	18.1	0.7	100
All sizes	71.0	9.4	18.7	0.9	100

However, the improvement in response between two person and three person income units is even greater than that between one person and two person income units. It follows from the definition of an income unit that the vast majority of ' three and over ' person income units must contain at least one child under 18 years of age.[3] Moreover, fewer than one-tenth of the two person income units contain a child. It seems, therefore, that the high response from the largest income units must reflect the influence of children in the income unit. There is in fact a strong correlation between response and the number of children in the income unit irrespective of whether there are one or two adults in the income unit; whereas response is higher for income units with two adults than with one adult only where there are no children in the income unit. It can be argued that parents are tied to the home much more than other people so that the proportion of non-contacts ought to be low, and, other things being equal, their response rate high. Of course, this argument is stronger the younger the children. If we compare the response rate for income units with and without dependent children (in most cases children under 15) we find a difference in response of nearly twenty per cent. However, it is clear from Table VII that whatever the reason for the high response from parents, it is by no means simply a matter of a relatively low proportion of non-contacts, as this factor does not explain the big improvement in response between two and three person income units. The most striking feature of Table VII is in fact the contrast between the high percentage of refusals from married couples without children (the great majority of the two person income units) and the co-operativeness displayed by the married couples with children.

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[1] Interviews were not always carried out with the head of the income unit.

[2] The distinction between ' primary ' and ' secondary ' income units is that a primary income unit is one in which the head of the income unit is also head of the household.

[3] Apart from husband and wife, the only cases in which there can be more than one adult in the income unit are where an adult has an income of less than £50 per year, in which case he or she is ' amalgamated ' into the income unit of the head of the household.

TABLE VII. *Reason for Failure by Number of Persons in Income Unit*

Number of persons	*Percentages of identified income units which were:*					*% of income units with children*
	Successes (response rate)	*Non-contacts*	*Direct refusals*	*Editing failures*	*Total*	
One	62.6	17.3	18.9	1.2	100	nil
Two	69.1	5.2	25.1	0.6	100	9.3
Three	82.1	3.4	13.7	0.8	100	97.2
Four or over ...	87.2	1.7	10.2	0.9	100	99.7
All sizes ...	71.0	9.4	18.7	0.9	100	38.8

[1] Percentages based on successful interviews only.

A relevant point in this connection is that people with dependent children are concentrated in a particular age range—roughly 25 to 50 years of age There is a strong correlation between the mean number of persons or dependent children per income unit in each age group and the response rate in that age group, the two coefficients being +0.91 and +0.97 respectively.[1] If we examine the pattern of response rates by size of income unit and the age of the head (Table VIII), we find that the effect of the number of persons on

TABLE VIII
Response Rates of Identified Income Units by Number of Persons in the Income Unit and Age of Head[1]

Age of head	*Number of persons in income unit*				*All sizes*
	One	*Two*	*Three*	*Four or over*	
18—24	69.3	100.0	100.0	75.8	71.8
25—34	66.2	79.8	88.3	96.3	82.1
35—44	54.2	82.8	90.7	96.1	85.2
45—54	64.0	79.4	80.2	81.2	76.9
55—64	73.4	71.1	74.8	80.7	72.7
65 and over ...	70.3	80.8	82.8	90.9	74.3
All Ages	62.6	69.1	82.1	87.2	71.0

[1] The percentage of income unit failures for which the age of the head was not ascertained was 28.8; cf. footnote p. 93.

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[1] These correlations are based on the six age groups shown in Table VIII.

response is clearly quite strong, irrespective of the age of the head.[1] However, in the converse case the evidence is by no means conclusive, as the age pattern for single person income units is markedly different from that for larger income units.

The response from income units with male heads was eight per cent higher than that from income units with female heads. However, nearly ninety per cent of the income units with female heads consist of single person income units, so that the apparent effect of sex on response, like that of age, is to a large extent simply a weighting phenomenon via the influence of size of income unit. It can be seen from Table IX that if we eliminate the effect of size of income unit, female heads are perhaps more co-operative than male heads. This is borne out by the fact that the proportion of direct refusals is actually rather lower for female than for male heads, the difference in response being accounted for by non-contacts—which in turn reflects the fact that the great majority of income units with female heads are single person income units. It is noticeable that for female heads, the main improvement in response occurs between the one and the two person income units, which again suggests the influence of children in the income unit.

TABLE IX

Response Rates of Identified Income Units by Number of Persons in the Income Unit and Sex of Head

Number of persons	*Sex of head* *Male*	*Female*	*Both sexes*	*% of identified income units with female heads*
One	62.8	62.5	62.6	61.4
Two	67.8	85.7	69.1	7.3
Three	81.7	88.0	82.1	5.4
Four or over	87.1	89.7	87.2	3.1
All sizes	73.3	65.2	71.0	28.5

We must now turn to consider the possible influence of location on response. The response rate tends to improve as density of population declines—response being highest in rural areas and lowest in the large towns and cities (Table X). This improvement is entirely accounted for by differences in the proportion of direct refusals as the non-contact rate is remarkably

TABLE X. *Response Rates and Reasons for Failure by Size of Town*

Size of town	*Percentages of identified income units which were:* *Successes (response rate)*	*Non-contacts*	*Direct refusals*	*Editing failures*	*Total*
Conurbations ...	67.1	9.9	21.9	1.1	100
Other urban ...	72.4	9.1	17.9	0.6	100
Rural	75.1	9.4	14.1	1.4	100
All areas	71.0	9.4	18.7	0.9	100

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[1] A test of the similarity of the rankings of response by size of income unit between the different age groups is easily significant at the one per cent level.

stable between the three types of area.[1] However, our survey results show that a much greater proportion of rateable units have low rateable values in the country than in the towns, so that average rateable value tends to decline as density of population decreases. Since response is negatively correlated with rateable value, the relatively high response in rural areas could be largely attributed to this factor—that is, it could be reduced to a weighting phenomenon. But the association between rateable value and response is of doubtful significance unless rateable value is used as an indicator of general economic status, and its use in this way must be subject to qualification when we are comparing rural and urban areas. In fact, the results of the 1952 Survey showed that for any given level of rateable value, gross income and presumably general economic status tend to be appreciably higher in rural areas than in the towns.[2] Because of this, we should expect that response would tend to be lower in rural areas than in towns at any given level of rateable value and yet we find that response tends to be about the same in each of the three types of area. This suggests that, other things being equal, people in rural areas are in fact genuinely more co-operative than people in urban areas. Since it is impossible to reduce the relative importance of these considerations to quantitative terms the intrinsic effect of density of population on response cannot be accurately assessed. Nevertheless, there must remain a strong *prima facie* case for arguing that a simple comparison of the response rates in the three types of area which ignores the differences in the distribution of rateable units by rateable value may well exaggerate the differences in response due to genuine differences in outlook or attitude between town and country people. This conclusion receives corroboration from another source since the average number of persons per income unit is inversely related to density of population, and this factor will also tend to widen the overall differences in response between the three types of area.

Table XI

Response Rates and Reason for Failure by Region

Region	*Percentages of identified income units which were:*				
	Successes (response rate)	*Non-contacts*	*Direct refusals*	*Editing failures*	*Total*
Scotland ...	74.3	9.2	14.3	2.2	100
North of England	72.1	9.3	17.6	1.0	100
Midlands and Wales	76.1	7.4	15.9	0.6	100
South of England	66.5	10.7	22.1	0.7	100
All regions ...	71.0	9.4	18.7	0.9	100

Similar difficulties of interpretation arise with the regional pattern of response rates. Response is distinctly lower in the South of England than elsewhere in Great Britain, but several factors may be responsible for this—

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[1] It is interesting to see that in similar surveys in the U.S. there is also a marked tendency for the refusal rate to increase with density of population.

[2] This conclusion is actually based on an analysis of households, but is almost certainly equally valid for income units.

for example, a high average rateable value in the south, a high average income, a greater proportion of people living in rural areas, and so on. There is no clear evidence to show that, other things being equal, people are genuinely less co-operative in the south, as it is extremely difficult to disentangle the true regional influences from the other factors at work.

Conclusions

The principal conclusions which have emerged from the analysis of the factors associated with response are the following:

(i) Response tends to decline as rateable value increases, this tendency being more pronounced in some occupational groups than others.

(ii) Response is lowest from the self-employed (businessmen, farmers, etc.). There is also a relatively low response from the professional, technical and executive classes, and from the retired and unoccupied —especially, it seems, the more wealthy retired people.

(iii) Response increases with the number of persons in the income unit. Responsiveness is also strengthened by the presence of dependent children.

(iv) Response tends to be higher from people living in rural and semi-rural areas, although the relative importance of this factor cannot be clearly identified.

(v) Age and sex seem to have little or no systematic effect upon response.

It appears therefore that we are not justified in treating either the non-respondents or the successful interviews as completely random samples of income units in general. There may, moreover, be other factors influencing response about which no information could be collected. However, it is impossible at this stage to generalise about the implications of the comparatively low level of response achieved in the Survey, since these obviously depend upon the particular variables under consideration. For an association between some economic or demographic factor and the response rate does not automatically introduce a bias into the Survey's results unless there is a corresponding relationship in the population between that factor and the variable in question; even if there are two such parallel relationships, the extent of the bias introduced must depend on the strength of both relationships, and not simply on that of the first.[1] Finally, it should be remembered that the above analysis was not based on all the failures recorded in the Survey. Apart from occupation and age, the proportion of failures from which the basic information was obtained about the demographic characteristics of the income unit was either equal to or a shade less than the proportion of income unit failures in the total of failures, *i.e.* about 80 per cent. However, allowing for rateable unit and household failures, the above conclusions about the influence of occupation and age on response were based on roughly 53 per cent and 57 per cent respectively of the failures in the sample.

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[1] This is illustrated by the material presented later on asset ownership. In checking with outside 'bench-marks' heavily concentrated variables like liquid assets seem to be much more poorly estimated in the Survey than does ownership of television sets or motor-cars. Similarly the income distribution compares more favourably with the distribution provided by the Inland Revenue than does the estimated mean liquid asset holding with bank and other sources of national aggregates.

Response rates in 1952 *and* 1953

It has already been mentioned that the response in the 1953 Survey was 9 percentage points below that achieved in 1952. This must be taken into account when comparing the results of the two Surveys as it may possibly explain part of the changes observed.

It can be seen from the first part of Table XII that there was comparatively little change in the relative frequency of the three types of failure between the two years. However, the second part of the table shows quite clearly that the deterioration in response which occurred was entirely due to an increased proportion of refusals. Exactly the same first stage units (districts) were used in the two years, and in just over a quarter of these a higher response was obtained in 1953 than 1952. While the deterioration in response was relatively uniform on a regional basis, perhaps the most striking difference was the marked decline in response in rural areas (except in Scotland). Although, as we have seen, response was highest in rural areas in 1953, the contrast between town and country was very much more pronounced in 1952.[1] The extent of the decline in response between the two years seems to have been inversely related to density of population, so that the marked differences in response between conurbations, ' other urban ' areas and rural areas in 1952 were to a considerable degree, though by no means entirely, eliminated in 1953.

TABLE XII

Types of Failure and Reasons for Failure in 1952 *and* 1953[1]

	Percentages of each type of failure:				
Year	*Rateable unit*	*Household*	*Income unit*		*Total*
1952 ...	20.8	3.7	75.5		100
1953 ...	18.0	2.3	79.7		100
	Percentages of income units which were:				
	Successes (response rate)	*Non-contacts*	*Direct refusals*	*Editing failures*	
1952 ...	75.1	10.9	12.9	1.1	100
1953 ...	66.1	11.1	21.9	0.9	100

[1] In compiling this table rateable unit and household failures have been weighted by the average number of income units per rateable unit or household.

The patterns of response rates by rateable value and number of persons in the income unit were similar in the two years, and there does not seem to have been any systematic relationship between the decline in response and either of these factors. The drop in response was approximately twice as great for secondary income units as for primaries, which is a little surprising since there was practically no change in the proportion of non-contacts for the sample as a whole. The fall in response for income units with male heads was about twice as large as for income units with female heads.

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[1] There can, therefore, be little doubt about the influence of density of population when we take the two Surveys together.

Where there was an association between the decline in response and some specific factor, as in the case of density of population or the type of income unit (*i.e.* primaries versus secondaries), the association was not sufficiently strong to reverse the patterns of response in the two years. Since failures were less extensively coded in 1952, we cannot complete a comparative analysis of non-response by some relevant factors such as age, occupation and the presence of dependent children. However, it can be inferred from Table XIII below that the proportion of responses among self-employed must have dropped considerably between 1952 and 1953, more than can be accounted for by the drop in response among farmers.

II. COMPARISON OF TWO SURVEYS, 1952 AND 1953

Distribution of demographic characteristics, 1952–1953

Major demographic characteristics of the population should change but little over a period of one year. We look for consistency between the two Surveys by seeing whether sample distributions of age, sex, family size, composition of household, regional location, town size, occupation, industry of employment or housing status have significantly changed between the two interviewing dates.

To indicate that we are dealing with representative samples of the same population, we compare elementary distributions of basic demographic characteristics from the Savings Surveys of 1952 and 1953.

A general appraisal of these distributions is that they look similar; nonetheless there are small differences other than those that could purely be ascribed to sampling error. The poorer response rates in the later Survey in rural areas and among secondary income units, analysed in the previous part, are possibly responsible for differences in the distribution by size of town, occupation, industry, position in the household and housing status. In addition to the drop in the percentage of farmers, there is also a drop in the number of self-employed businessmen. This has important implications for some of the estimates of financial characteristics. Some changes in coding practice possibly account for differences observed in the occupational and industrial distributions.[1] The distributions by housing status move contrary to expectations in that the percentage renting unfurnished accommodation rises. Our conclusion, on the basis of Table XIII, is that we are dealing with substantially the same population as in 1952 but that there are some important differences which are primarily associated with a drop in response rates.

Distributions of economic characteristics, 1952–1953

In Table XIV we compare distributions of various economic characteristics from the Surveys of 1952 and 1953.

The distribution of income appears to shift slightly in favour of higher incomes in the second Survey. The mean income rises in the 1953 Survey

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[1] See Appendix p. 125.

TABLE XIII

Distributions of Demographic Characteristics, Savings Survey, 1952 and 1953
(percentage of income units)

	1952	*1953*
Region :		
Scotland...	10.8	10.5
North of England	25.8	26.4
Midlands and Wales	22.6	24.2
South and East England	40.8	38.9
Size of town :		
Conurbations	35.3	36.0
Other urban	46.2	44.9
Rural	18.6	19.1
Age of head of income unit :		
18–24	12.4	10.7
25–34	18.2	18.0
35–44	18.6	20.3
45–54	18.8	17.9
55–64	14.5	13.2
65 and over	17.	19.9
Sex of head of income unit :		
Male	75.4	73.8
Female	24.6	26.2
Occupation of head of income unit :		
Farmers	1.1	0.5
Other self-employed	5.2	3.9
Managers and technical	6.2	7.3
Clerical	12.0	8.3
Sales		5.6
Skilled manual	36.2	34.7
Unskilled manual	17.1	17.0
Retired and unoccupied	21.6	22.8
Occupation not ascertained	0.6	—
Industry of head of income unit :		
Agriculture	5.4	4.0
Mining and quarrying	5.5	5.1
Manufacturing metal	16.1	18.5
Manufacturing other	18.4	19.2
Building and contracting	8.3	7.6
Gas, water, and electricity	2.1	1.3
Transport and communications	10.9	9.6
Distribution	10.8	11.5
Professional and other services	14.1	15.0
Public administration and defence	6.4	7.5
Industry not ascertained	2.0	0.7
Number of persons in the income unit :		
One	37.1	36.2
Two	27.5	27.0
Three	16.6	15.7
Four	11.6	12.6
Five	4.6	5.2
Six and over	2.6	3.3
Position of the income unit in the household :		
Head of household	74.0	76.8
Younger relative of head	21.0	18.5
Older relative of head	3.0	3.3
Boarder	1.0	0.9
Employee	1.0	0.5
Housing status :		
Owns outright	12.4	11.1
Owns with mortgage	9.5	10.0
Rents council house	15.0	14.3
Rents other unfurnished accommodation	32.3	37.1
Rents furnished accommodation	2.3	1.4
Rent free	2.6	3.4
Secondary income unit	25.9	22.7

Table XIV

Distributions of Economic Characteristics, Savings Surveys, 1952 and 1953
(percentage of income units)

	Financial years	
	1951–1952	*1952–1953*
Gross income (£) :		
0— 99	7.8	5.4
100— 199	16.2	17.3
200— 299	14.2	13.7
300— 399	20.6	17.0
400— 499	16.0	16.5
500— 599	9.6	12.2
600— 699	5.4	7.8
700— 799	3.1	2.9
800— 999	2.9	3.9
1,000—1,499	2.3	2.1
1,500—1,999	0.8	0.5
2,000 and over	0.9	0.9
Mean gross income (£)	*424*	*434*
Net income (£) :		
0— 99	8.1	5.7
100— 199	17.6	18.5
200— 299	18.3	16.1
300— 399	20.9	17.6
400— 499	15.2	15.8
500— 599	8.2	12.2
600— 699	5.4	6.0
700— 799	2.5	3.5
800— 999	1.4	2.5
1,000—1,499	1.5	1.2
1,500—1,999	0.4	0.5
2,000 and over	0.5	0.4
Mean net income (£)	*369*	*392*
Total net savings (£) :		
Positive 200 and over	2.2	2.1
100—199	2.7	3.5
50— 99	6.1	6.9
25— 49	9.6	10.3
1— 24	33.8	34.8
None 0	13.3	11.1
Negative 1— 24	12.0	11.7
25— 49	6.0	6.5
50— 99	4.6	4.9
100—199	3.3	3.0
200 and over	2.6	3.1
Savings not ascertained	3.2	2.1
Mean total net savings (£)	*4*	*4*
Expenditures on durable consumer goods (£) :		
Nil	79.4	77.4
1— 49	7.9	8.9
50— 99	8.1	7.0
100—199	3.2	4.5
200 and over	1.4	2.1
Mean expenditure on durable goods (£)	*18*	*23*

[*Table XIV continued on following page*

	1950–1951 to 1951–1952	*1951–1952 to 1952–1953*
Change in gross income (£) :		
Increase 100 and over	7.0	5.9
50—99	9.4	8.3
20—49	30.1	12.8
1—19		21.5
No change 0	35.0	32.1
Decrease 1—19	3.7	1.3
20—49		2.4
50—99	3.0	3.7
100 and over	5.3	5.7
Change not ascertained	6.5	6.4
Mean change in gross income (£)	*11*	*10*
	Interview Period	
Holdings of liquid assets (£) :	*1952*	*1953*
Nil	31.9	33.0
1— 49	27.5	26.0
50— 99	8.0	8.9
100— 199	8.1	10.1
200— 399	6.7	6.8
400— 599	3.7	3.6
600— 999	3.3	3.2
1,000—1,999	2.8	2.1
2,000 and over	1.9	1.8
Liquid assets not ascertained	6.0	4.5
Mean liquid assets (£)	*225*	*194*

and the frequency of those receiving less than £100 falls. The results are similar for net income. Part of the change in distributions of gross and net income is a statistical artifact resulting from the use of a different income concept in 1953.[1] Net annual value of owner occupied residential property is included in the 1953 but not in the 1952 Survey. This change alone could have raised the estimate of mean income by as much as £4. Other changes in the concept of income are not as significant.

Mean income, without taking changes in definition into account, goes up by less than 2.5 per cent between the two financial years. This rise is smaller than that found in two independent estimates, personal income in the national income accounts and taxable income in the Inland Revenue distributions. Both of these estimates rise by 6 per cent during the same period.

To the extent that the poor response rates in the 1953 Survey led to the exclusion of some particularly high income recipients, the self-employed especially, the 1953 income distribution may give the impression of a smaller upward shift than actually occurred.[2] All classes of non-respondents are not typically high income units, but, as shown in the previous part of this paper, some in particular may be so high that the final distribution has a measure of downward bias.

The differences in the distributions of income change and net total saving are not systematic in the two years, and the distributions have nearly constant means. There are, possibly, a few more positive savers estimated for 1952–1953 than for 1951–1952.

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[1] See Appendix p. 123.

[2] See Table XXI below for a comparison of the factor share distribution of income compared with national income estimates. See also Table XX for a comparison of the size distributions of statutory income in comparison with the distribution estimated by the Inland Revenue.

In a later article on savings distributions, we shall go into these data much more thoroughly, but the apparent stability in savings estimated by the Surveys in 1952 and 1953 is at variance with external estimates and rough impressions about aggregate savings in the economy as a whole. It is quite possible that under-representation of self-employed and questionnaire changes in techniques of ascertaining their savings have produced an estimate of an unchanged distribution when, in fact, savings did shift upward. If the occupational distribution of 1952, instead of that estimated in 1953, is used to form a weighted mean of average savings in each occupational group, savings per income unit is about £2 greater than the £4 estimated from the 1953 sample. In addition, we estimate that if business savings were computed by the same method in both Surveys, the 1953 estimate would be about £47 greater per self-employed income unit head, on this account alone, than in 1952 or about £2 per income unit in the whole sample. Since the method for calculating business saving is conceptually superior in 1953, we suggest figures of £2 for 1952 and £6 for 1953 as estimates of mean total savings.

In the case of expenditures on durables, we find more purchasers and somewhat larger amounts spent than in the first Survey.

Liquid assets distribution, one of the more important, but difficult, series to be estimated in the Savings Survey, has moved slightly downward between the two interviewing dates. The respondents on the second Survey reported, from memory, an average decrease of £15, less than that obtained by subtracting one Survey's liquid asset mean from the other, but, nevertheless, in the same direction. Independent data suggest that liquid assets actually increased during this period, but the reader must be reminded that we are dealing here with a specific population of personal income units and that we try to estimate their holdings for non-business purposes. In our 1953 sample we estimate more people without any liquid assets, and, at the same time, a tendency towards continued and larger expenditures on durables, in many cases through the use of liquid asset holdings.

Distributions of consumer attitudes, 1952–1953

Attitudes about economic events or decisions are interesting as such and may in many instances be useful guides in forecasting.

TABLE XV

Distributions of Consumer Attitudes, Savings Surveys 1952 and 1953
(percentage of income units)

	1952	*1953*
Feeling of financial well-being :		
Better off	19	23
Same	29	35
Worse off	52	42
Expectations of income change :		
Increase	27	20
No change	55	62
Decrease	12	8
Don't know	7	10

In spite of the fact that almost one-half the respondents had received income increases at the time of the 1952 Survey, only 19 per cent felt better off. Much of this disparity can be attributed to increases in the cost of living accompanying the income increases. By 1953, more felt better off and considerably fewer felt worse off. Income increases were no larger, on the average, nor more prevalent, but consumers were perhaps less aware of the pinch of living costs.

Both attitudinal variables seem to have changed distributions in 1953. More income stability was anticipated in 1953 than in 1952, with a slightly larger drop in the number expecting increases than in the number expecting decreases.

Tests of differences between distributions from two Surveys

Two independent sample distributions will seldom, if ever, be precisely the same; therefore we are left with the problem of judging whether any recognisable change is inconsequential or due to pure sampling variability, as opposed to a real structural factor. In addition to saying that two distributions appear to be similar or dissimilar, we shall make some statistical tests of significance of observed difference. These will be chi-squared (χ^2) tests of homogeneity.[1] In the application of this test it is assumed that there are independent simple random samples which are being tested for homogeneity.

The sample design of Savings Surveys departs in many respects from a simple random sample,[2] and we overstate the value of χ^2 in computing it from empirical distributions using the actual number of respondents. We have estimated, for some statistics, an *equivalent sample size* showing the number of respondents required in a simple random sample to achieve the same degree of precision (same sampling error) as that actually obtained.

The larger the value of χ^2, the less likely is the occurrence of any discrepancy between two empirical distributions, calculated on the assumption that they are really the same. Hence if we find a probability of 0.05 or larger (assuming homogeneity) for any pair of distributions using the actual sample sizes, then *a fortiori* we shall find a probability at least this large for the *equivalent sample size*. In Table XVI we present the values of χ^2 for comparison of the distributions in 1952 and 1953 set out in Tables XIII–XV.

Most of the characteristics that we expect to change inappreciably do indeed show insignificant values of χ^2 in Table XVI, using actual sample sizes, and we can therefore claim that there is little evidence of a real structural change in respect of these characteristics. Region, age, sex, size of unit, and position in the household are apparently distributed by the same underlying law in both years.

The distributions by size of town appear to produce a large value of χ^2, but if both successful and unsuccessful interviews are pooled together in a

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[1] See H. Cramér, *Mathematical Methods of Statistics*, Princeton : Princeton University Press, 1946, pp. 445–49.

[2] See Bulletin, Vol. 16, Nos. 7 and 8, 1954, pp. 199–215.

TABLE XVI

Value of χ^2 for Comparison of Two Empirical Frequency Distributions Using Actual Sample Sizes

Characteristic	χ^2	*Degrees of freedom*
Region	2.6*	3
Size of town	9.2	2
Age of income unit head	10.2*	5
Sex of income unit head	1.6*	1
Occupation of income unit head	19.5	7
Industry of income unit head	33.4	10
Housing status	22.5	6
Number of persons in income unit	4.7*	5
Relation of income unit to household	9.1*	4
Gross income	35.8	11
Net income	52.1	11
Change in gross income	12.5*	9
Net saving	16.0*	11
Liquid assets	6.6*	9
Feeling of financial well-being	46.6	2
Income expectation	61.3	3
Expenditures on durable consumption	14.9	4

* Probability of χ^2 exceeds 0.05 for the indicated value using the indicated number of degrees of freedom.

single distribution by size of town, the value of χ^2 falls to 6.3, which is only slightly above the value tabulated at the 5 per cent level for two degrees of freedom (6.0). A slight reduction from the actual sample sizes of 3700–3900 (successful plus unsuccessful interviews) to equivalent sample sizes would produce an insignificant value of χ^2; hence we are led to the conclusion that the drop in the response rate is a major cause of the apparent change in the distribution by size of town.

Among those distributions which do not yield insignificant values of χ^2, using actual sample sizes, some are so large that adjustment from actual to equivalent sample sizes will not reduce them below critical values. The equivalent sample size for estimating mean gross income is estimated to be 91 per cent of the actual sample size in 1952, while the critical size of χ^2 is only 55 per cent of the value estimated in Table XVI; therefore we conclude that evidence is strong that the distribution of gross income has changed between the two years. We are justified in drawing a similar conclusion with regard to the distribution of net income. The statistical tests in these two cases are referred to purely in order to reinforce our knowledge of special factors mentioned earlier causing a divergence between the distributions in 1952 and 1953.

Respondents' memory of past income change will be largely independent of small changes in the income concept; therefore we are not surprised at the insignificant value of χ^2 for the comparison of the distributions of income change. We may be sceptical of the verdict of the statistical test for the distribution of saving, this being a case in which poor response tends to bring the distributions in the two years closer together. The insignificance of the difference in liquid asset distributions is, however, quite reasonable. Moreover it is not surprising that the distributions of consumer attitudes appear to be significantly different. Even if actual sample sizes were scaled down to *equivalent sample sizes* the χ^2 values associated with these distributions would not be reduced to insignificant levels.

Possibly significant changes in the occupational and industrial distributions could be explained by response rates and slight differences in coding practice on the two Surveys. The verdict on the distribution of expenditures on durables is questionable, but we should not be surprised to find a significant upward change between 1951–52 and 1952–53. A poor estimate of secondary income units is responsible, in large part, for the high value of χ^2 associated with housing status, but in our judgment the evidence is not conclusive that the distributions have not changed even when we exclude secondary units.

III. Comparison of the 1953 Survey with Data from External Sources

The Survey samples have been drawn with an objective of presenting a balanced, representative picture of consumers throughout the nation. Even with a more satisfactory response rate we should be concerned with the degree of success in attaining this objective.

Many population distributions by demographic characteristics are firmly established from actual census or census type collections of data. It is quite natural therefore to compare our sample distributions with external data such as distributions of age, sex, occupation, industry of employment, family size, etc. In a sense, this will tell us whether we have included 'the right kind of people ' in our distributions of successfully completed interviews.

At a second level of comparison we shall try to match the Survey data against distributions which, though comprehensive in coverage, deal with conceptually elusive or imperfectly reported economic information. The distribution of income as reported by the Board of Inland Revenue will undoubtedly cover nearly all income recipients but will contain statistical data considerably less accurate than the previously mentioned demographic distributions. Aggregative statistics such as the total number of owners of motor-cars or television sets also form the basis for comparison with Survey estimates, but these external estimates contain elements of uncertainty because of difficulties in defining ownership and possibly failure to report.

Aggregative statistics taken from the national income accounts, bank records, assurance company reports, and similar sources also enable us to make comparisons at a third level of certainty, a level at which the economic concepts involved are not clear cut. Moreover such comparisons, or reconciliations, are, at best, used in a weak sense because the underlying distributions are not usually known in the outside sources. It is generally thought that sample survey data give a more reliable picture of relative distributions than of nationwide aggregates ' blown up ' from sample means.

Population and occupational distributions

Our first set of comparisons is made with information taken from the 1951

Population Census.[1] The Census does not provide any analysis of ‘income units’, but from the tables of males and females classified by age and marital status estimates can be made of the distribution of income units by sex, age, occupation and industry. According to the definition used in the Survey, each male person aged 18 or over is the head of an income unit; and so are unmarried females of the same age. Certain other difficulties and discrepancies between Census and Survey treatment occur. They have already been dealt with in connection with the 1952 Survey.[2]

So far no analysis by age, sex or marital status of the institutional population has been published. The Survey data exclude this group, whereas the census figures shown in Table XVII include all members of the institutional population except the armed forces. If this adjustment (excluding the armed forces) had not been made the proportion of male income units aged 18–24 would have been even larger than it is, and the distribution of males by occupation and industry would have been slightly different.

TABLE XVII

Comparison of the 1953 Survey with Estimates Derived from the 1951 Population Census
(percentages of total male and female heads)

Characteristic of Income Unit	*Income units with male heads*		*Income units with female heads*	
	Census	*Survey*	*Census*	*Survey*
All income units with civilian heads ...	100.0	100.0	100.0	100.0
Age of head:				
18—24	11.2	8.0	21.0	18.4
25—34	20.5	20.4	11.0	11.3
35—44	22.1	24.3	10.4	9.2
45—54	19.3	20.4	12.5	10.9
55—64	13.7	11.9	15.7	16.8
65 and over	13.2	15.0	29.4	33.4
Occupation of head:				
Self-employed	7.9	5.3	2.4	1.7
Managers and technical	9.7	8.4	5.6	4.1
Clerical and sales	9.0	11.3	14.5	21.2
Manual workers	59.4	61.5	29.2	23.9
Retired and unoccupied	14.0	13.5	48.3	49.1
Industry of head:				
Agriculture	5.6	4.1	1.1	0.1
Mining and quarrying	4.9	5.2	0.1	0.3
Manufacturing—metal	18.5	17.7	5.1	4.9
Manufacturing—other	14.7	15.7	12.3	12.8
Building and contracting	7.5	8.0	0.4	0.1
Gas, water and electricity	2.0	1.2	0.3	0.6
Transport and communication ...	8.8	9.0	1.9	3.0
Distribution	8.9	8.7	8.3	9.4
Professional and other services ...	9.5	9.7	19.7	17.2
Public administration...	5.6	7.2	2.5	2.0
Retired and unoccupied	14.0	13.5	48.3	49.6

Thus the basis of the comparison is not altogether satisfactory. There is, on the whole, good correspondence between the two sets of data, and indeed some of the items are as close as one could reasonably expect; nevertheless there are a number of disturbing discrepancies. Some explanation for the discrepancies can be put forward and these will be discussed under three main heads—response rate, classification, and coverage of the Census and Survey. The male response rate was about 8 per cent higher than the female rate[1] and this would account, at least in part, for the relatively larger discrepancies in the comparisons involving females. The Survey figures for income units, both with male and female heads, in the 18–24 age group are significantly below the Census figures, and this may well be connected with the fact that young men and women with few household responsibilities are more often out and away from home. The lowest rate of response on the basis of age groups occurred in this 18–24 range; in addition there was a poor response rate among secondary income units, and 91 per cent of the income units in this age group were in fact secondaries, almost all being working children living at home with their parents.[2] These secondary units comprised 42 per cent of all secondaries in the sample.

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[1] *Census 1951. Great Britain. One Per Cent Sample Tables.* General Register Office.
[2] See BULLETIN, Vol. 16, Nos. 7 and 8, July and August, 1954, p. 236.

For both males and females the Census indicates a larger proportion of self-employed than was found in the Survey, and this can be mainly accounted for by a poor response from this group. The Survey results indicate that in general the gross annual income of the self-employed is about double that of the average of all occupational categories, and the response rate (46 per cent) was much lower from the upper stratum of the sample than from the lower (69 per cent). Further, although the response rate from rural areas in 1953 was higher than that from conurbations or other urban areas, there was nevertheless a large drop in the rate of response from rural areas between the Surveys of 1952 and 1953, which would indicate a cause of the decline in the number of self-employed farmers covered by the 1953 Survey.

The difficulties of classification are real and may well be at the basis of some of the inconsistencies in Table XVII, especially in the occupational section. For instance, the limits of the managerial and technical group of employees are ill-defined, and it may well be that a substantial number of persons who would have been classified as manual workers in the Survey were classified as managers or technical employees on the Census basis. The discrepancies in the case of female heads in the ‘ clerical and sales ’ and ‘ manual workers ’ categories may also be due, in some part, to such differences in definition. It would in any case be incorrect to place too much emphasis on the difference between Survey and Census figures in the case of female heads of income units because of the many approximations which had to be made in order to construct the appropriate Census distributions.

The Survey did not cover the institutional population and this almost certainly will have some effect on the comparative distributions, an effect which at present cannot be accurately estimated. For instance the deficiency in the Survey of females in the age groups 35–54 may be partly due to a disproportionately large number of them living in institutions, perhaps as domestic servants.

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[1] See Table IX, p. 98.

[2] See Tables VII and VIII p. 97.

When female heads of income units and working wives from the Survey, *i.e.* all working females aged 18 and over, are added together and compared with Census estimates of the occupational distribution of all females in the same age range, then the Census and Survey distributions are much closer.

TABLE XVIII

Occupational Distribution of Females aged 18 and over

Occupation	*Percentages*	
	Census 1951	*Survey 1953*
Self-employed	1.5	1.3
Managers and technical	3.3	2.1
Clerical and sales	8.3	9.5
Manual workers	18.8	18.0
Retired and unoccupied	68.1	69.1
All occupations	100.0	100.0

Matters of definition and compensatory factors appear to account for the fact that the Survey distribution by occupation compares more closely in Table XVIII than in Table XVII. In Table XVII, the Survey indicates a surplus of female heads in the clerical and sales groups and a deficit in the manual workers group. These discrepancies are much reduced in Table XVIII when all females aged 18 and over are included.

There is, thus, on the basis of the Survey results, a great difference in the occupational distribution of females according to whether they are working wives or heads of female income units (*i.e.* single, widowed or divorced). For instance, the proportion of working female heads of income units engaged in manual occupations is 47.4; the proportion of working wives so engaged is much larger—69.6 per cent; the percentages working in the clerical and sales group are 41.8 and 19.3 respectively.

A further relevant comparison dated closer to the Survey than the 1951 Census can be made with information published by the Ministry of Labour[1] on the industrial distribution of the estimated numbers of male employees aged 18 and over in Great Britain at the end of May 1953. The Ministry's data are based on a one per cent sample.

Certain adjustments have to be made to the Survey figures. They are based on the male heads of income units ; those heads who are self-employed, not working (mainly because they are retired) or unclassifiable have been excluded. Further, those classified as being engaged in Public Administration and Defence in both the Ministry and Survey's data have been excluded, since this group is not comparable on the basis of definitions used.

The comparison of the two distributions in Table XIX indicates a reasonably close association, and provides an additional measure of confidence in this aspect of the Survey results.

[1] *Ministry of Labour Gazette*, June 1954.

TABLE XIX

Industrial Analysis of Male Heads of Income Units and Male Employees Aged 18 and Over in Great Britain

Industry	*Percentages* Survey—male heads of income units 1953	Ministry of Labour—male employees May 1953
Manufacturing—metal and engineering	23.3	26.2
Manufacturing—other	20.7	19.1
Agriculture, horticulture and fishing	4.5	4.9
Building and contracting	9.8	10.1
Mining and quarrying	7.0	6.8
Transport and communications	11.7	11.7
Gas, water and electricity	1.6	2.7
Distribution	9.9	8.5
Professional, financial and other services	11.5	10.0
All Industries	100.0	100.0

Income distributions

The Savings Surveys are designed very much towards ascertaining the distribution of personal savings and of the factors influencing saving. The types of income included in the Survey definition of gross income are determined by these objectives. The definition of income used was different from that employed by either the Inland Revenue authorities or by the Central Statistical Office in their estimate of national income.[1] In order that a useful comparison might be made between the Survey and the Inland Revenue figures of the distribution of individual income the amount of income which would be assessable for income tax was estimated for each income unit separately. It was necessary to exclude all non-assessable forms of income : for instance, war disability pensions, co-op dividends, certain national insurance benefits—and to split up income units where there were children with subsidiary earnings. The Inland Revenue regard such children as separate income units; their income is not pooled with the income of their parents, and, if they earn more than £154 per annum, they are separately assessed. The result of these various adjustments to the Survey's calculation of gross income, is to arrive at a type of income called *statutory income* which is the nearest conceptual correspondence achievable in a practical sense to the figures of the Inland Revenue.

The Inland Revenue have kindly provided a more detailed analysis for 1952–53 than is found in Table 55 of the 97*th Report* of the Commissioners. These figures are estimates, partly projected from the 1949–50 estimates, which were based on a special census taken in that year, and partly based on the current annual surtax census. In general the estimates for incomes below £2,000 become progressively less reliable as the income level decreases and as one gets further away from 1949–50.

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[1] For an account of problems of definition etc., see BULLETIN, Vol. 15, Nos. 2 and 3, February and March 1953.

The distribution of gross income for 1952–53 on the basis of the ordinary Survey definition (*i.e.* all the cash income of the income unit before tax but not income in kind except in the case of farmers where an estimate of the value of produce consumed in the home is included) is compared in Table XX with the distribution of statutory income for the same year; and this is compared with the Inland Revenue estimates of the distribution of income. As can be seen the main difference between gross income and statutory income is that the latter is lower than the former. Part of the explanation for this lower level of statutory income is the exclusion of some sources of income, but the difference mainly comes about from treating children under 18 as separate units; they earn much lower incomes than adults and their inclusion increases the number of incomes at the lower end of the scale and thus exerts a downward effect on the remainder of the distribution.

TABLE XX

The Distribution of Personal Incomes

Income group	*Survey* Gross income[1] 1952–53 %	*Survey* Statutory income[2] 1952–53 %	*Inland Revenue* 1952–53[3] (*unadjusted*) %
£0— 154	22.7	22.2	22.2
£155— 199		7.0	5.4
£200— 299	13.7	13.3	13.8
£300— 399	16.9	16.2	16.4
£400— 499	16.5	15.3	14.6
£500— 599	12.1	10.5	11.0
£600— 699	7.8	6.5	7.0
£700— 799	2.9	2.4	3.3
£800— 999	3.9	3.4	2.6
£1,000—1,999	2.6	2.4	2.6
£2000 and over	0.9	0.8	1.1
Total	100.0	100.0	100.0

[1] Total income of income units before tax.

[2] Income assessable to tax.

[3] Figures based on a more detailed analysis (supplied by the Inland Revenue authorities) of Table 55 of the 97th *Report of the Commissioners of Inland Revenue*, Cmd. 9351. It has been assumed that the number of incomes below the £155 exemption limit was in the same proportion as was found to be the case in the Survey, *i.e.* 22.2 per cent of all incomes.

The Inland Revenue do not provide data on incomes below the £155 exemption limit; therefore we simply construct a distribution having the same relative frequency as estimated by the Survey in the lowest class. The results, as can be seen from the Table, yield a close correspondence leading us to believe that the Survey is about as good in estimating the income distribution as are the tax authorities. There is, however, a smaller proportion receiving £1,000 or more in the Survey distribution of statutory income than in the Inland Revenue distribution. As is shown in Table XXI, below, the Survey aggregates for profits and property income are considerably below the totals in the National Income Accounts.

No independent estimate of the distribution of individual incomes is made by the Central Statistical Office. The only comparisons which can reasonably be made between their figures and the Survey estimates are comparisons of aggregates, such as total personal income from wages and salaries. To make such comparisons it is not necessary to adjust the income of each unit separately : an adjustment to the total figures for all income units is sufficient. The aggregate amounts of income included in one definition and excluded from the other, or vice versa, can be estimated. For purposes of comparison, the estimates of the Central Statistical Office for the calendar year 1952[1] have been adjusted approximately to correspond with the Survey definition of personal income.[2] The C.S.O. has kindly supplied the necessary data for these adjustments to be carried out. It is not possible, however, to adjust for the main difference in coverage, *i.e.* the exclusion from the Survey of Northern Ireland and the institutional population.

The results of the calculations are given in Table XXI. The comparison is limited to three major sources of personal income : employment income ; income of self-employed persons (which includes income from farming and professional earnings); and rent, interest and dividends received by persons. Government and private transfers and employers' insurance contributions are omitted from the comparison. For the latter two items there are no published aggregates of private transfers, and the Survey does not ascertain employers' insurance contributions. Government transfers estimated from the Survey compare closely with external figures.

TABLE XXI. *Components of Personal Income*[1]

Type of income	*£ million* C.S.O. 1952 (adjusted)	*£ million* Survey financial 1952–53	*Percentages* C.S.O. 1952 (adjusted)	*Percentages* Survey financial 1952–53
Employment income	8,498	7,458	76.6	85.8
Income of self-employed ...	1,515	770	13.7	8.9
Rent, interest and dividends received by persons	1,082	462	9.7	5.3
Total of above	11,095	8,690	100.0	100.0

[1] The C.S.O. figures refer to the U.K., the Survey figures are for persons in private households in Great Britain. Survey aggregates are obtained by multiplying sample means by 22 million, the estimated number of income units in private households in Great Britain.

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[1] *National Income and Expenditure 1946–53.* August 1954. H.M.S.O.

[2] For a list of the items involved in the adjustment to the C.S.O. figures see BULLETIN, Vol. 15, Nos. 2 and 3, February and March 1953, pp. 82 and 83. There are four changes in this list. Firstly, excess provision for repairs of land and houses by individual owners no longer has to be added to the C.S.O. estimate. Secondly, employers' contributions to private pension funds plus superannuation by public authorities for teachers and National Health Service employees have to be deducted from the C.S.O. estimate, and pensions received from private pension funds and pensions paid by public authorities to teachers and N.H.S. employees have to be added. These adjustments were made in the comparison between the 1952 Survey results and the 1951 C.S.O. figures, but it was assumed that employers' contributions to pension funds were exactly offset by the amount of pensions received. In the figures supplied by the C.S.O. for 1952 there is a large difference between the contributions and pensions received. Thirdly, to the item 'income of non-profit making bodies and the life funds of insurance companies', subtracted from the C.S.O. estimate, has been added further information supplied by the C.S.O. on private superannuation funds and friendly and collecting societies' investment income. Finally, Schedule A value of owner-occupied houses no longer has to be deducted from the C.S.O. estimate.

Employment income compares much better than the other factor shares, and the comparison would be improved if a further possible adjustment were carried out to the C.S.O. figures. From the Survey point of view the armed forces are regarded as part of the institutional population, and, apart from one or two exceptions, as for instance when a member of the armed forces is living in a private house, are excluded. The pay in cash and kind of the armed forces amounted to £352 million in 1952 and if allowance is made for this item, the C.S.O. total for employment income would be reduced to £8,146 million. One further relevant point is that tentative comparisons with Ministry of Labour earnings enquiries seem to indicate a slight downward bias in the Survey figures for incomes of manual workers, who comprised some 67 per cent of all employed persons over 18 years of age in the Survey.

Serious discrepancies arise in the self-employed sector and in rent, interest and dividends received by persons. The investment income figures are a little better than the 1952 Survey figures and do reflect an increase between the two years of much the same order of magnitude as the Blue Book figures; but they are nevertheless deficient in total. The real problem is presented by the figures of the income of self-employed, since they show a large decline when compared with the 1952 Survey estimates, which compared closely with the C.S.O. figures. Further the official estimates show a rise in income from self-employment between the two years. Within this sector the Survey estimate of the income of self-employed professional persons does not compare too unfavourably with the official estimate, but for business income, and especially farming income, the Survey estimates fall far below those in the Blue Book.

A small part of the Survey's shortage of investment and self-employment income might be ascribed to a disproportionate amount of these types of income going to people living in hotels and other institutions not covered by the Survey, and to the failure of people interviewed to disclose all their income from these sources; but there is little doubt that the main part must be ascribed to the poor coverage in the Survey of the self-employed and other large holders of income generating assets. The low rate of response from such groups in the population is commented upon in some detail in an earlier part of this paper.

Liquid asset holdings

The Survey attempted to measure the savings of each person interviewed by asking directly about changes in the personal capital account. Thus people were asked what assets they had bought or sold in the past year and by how much their liabilities had changed. Detailed information was obtained about the items appearing in Table XXII. The common characteristic of these particular assets is that they have a high degree of liquidity, and will be referred to here as liquid assets. The only obvious exclusion from our list of liquid assets is currency holdings, about which it was considered impracticable to obtain information.

It is necessary to emphasise that the income unit about which information

TABLE XXII

Comparison of Liquid Asset Holdings

Type of asset	*1953*		*1952*		*Survey estimate as percentage of external estimate*	
	Survey estimate: total for private households £m.	*External estimate: total stock £m.*	*Survey estimate: total for private households £m.*	*External estimate: total stock £m.*	*1953*	*1952*
Post Office Savings Bank Deposits	920	1,802[1]	950	1,873[1]	51	51
Trustee Savings Bank Deposits	440	949[1]	400	941[1]	46	43
National Savings Certificates	880	1,749[2]	1,200	1,726[2]	50	70
Defence Bonds	480	820[3]	650	877[3]	59	74
Other Savings Bank Deposits	220	N.A.	150	N.A.	—	—
Building Society Shares and Deposits ...	330	1,401[4]	400	1,290[4]	24	31
Co-operative Society Shares and Deposits ...	110	230[5]	120	227[5]	48	53
Joint Stock Bank Personal Deposits ...	920	2,100[6]	1,400	2,000	44	70

[1] *Monthly Digest of Statistics*. Amount remaining invested, including accrued interest, on 31st March, each year.

[2] *Monthly Digest of Statistics*. Principal remaining invested on March 31st, each year.

[3] *Monthly Digest of Statistics*. Government securities on Post Office Register on 31st March, each year.

[4] *Annual Abstract of Statistics 1954*. Central Statistical Office.

[5] *Report of the Chief Registrar of Friendly Societies, Industrial and Provident Societies*. Statistical Summary 1943–1953 Shares and Deposits of General Retail Societies only. H.M.S.O. 1954.

[6] No official estimate is at present published of the total volume of personal deposits in Joint-Stock banks. The same basic figure of £2,000 million has been used as in 1952. This is based on estimates contained in the evidence of the British Bankers Association to the Royal Commission on the Taxation of Profits and Income. An estimate of the change (£86 million) in net personal bank deposits between 1951 and 1952 is given in C.T. Saunders ' Some Problems in the Estimation of Personal Savings and Investment ', *Manchester Statistical Society*, November 10th, 1954, and has been added.

on liquid asset holdings was collected, although sometimes equivalent to a family as usually understood, is frequently a much smaller unit. About 40 per cent of Survey income units are single persons, and only 56 per cent of the married couples had dependent children under 18. The information on liquid assets relates to the total assets owned by all the members of the income unit.

It is not possible to find external figures of liquid assets with which the Survey data can be really satisfactorily compared. What is usually available is a figure of the total stock of each asset outstanding, but there is no indication about the proportion held by private individuals or about the distribution of the funds among different groups.

The figures for liquid asset holdings from the various sources are indicated in Table XXII, together with the total amount of each asset held by income units in private households based on the Survey's estimates. This alignment should not be taken to imply a strict comparability between the two sets of data. The Survey figures relate to the amounts of liquid assets held directly by persons living in private households in Great Britain : the ' other sources ' figures contain varying and unknown amounts belonging to other sectors of the community. In addition to the customary exclusions from the Survey we should point out the exclusion of the asset holdings of non-profit making bodies. Little success has attended efforts to discover the liquid asset holdings of those elements not covered in the Survey. On the basis of the comparative figures in Table XXII there seems little doubt that in all eight types of assets the Survey estimates are too low. Only in the case of Defence Bonds do the Survey estimates total substantially more than half the estimates from official sources.

The most probable explanation for the Survey's low liquid assets figures seems to be that those persons with the largest asset holdings were the least co-operative and more inclined to understate their wealth. There is no doubt that in the Survey results there is a serious deficiency of income from property and investment, especially from the upper income ranges. The main occupational groups which have the largest incomes from these sources are the self-employed, managers, and retired, from whom we had the lowest rates of response.[1] The Survey data indicate that liquid asset holdings were substantially higher in the self-employed, managerial and retired categories than in any other occupational classification. With a low response rate in these groups, we have too few income units in the sample with large holdings, and this accounts for the underestimation of national aggregates. A relatively small discrepancy in the Survey results in the representation of large holders of liquid assets could make a large difference in the estimate of total liquid asset holdings. For instance if we had an error of 2 percentage points in the estimate of the number of income units holding an average of £2,500—the average holding of Survey income units with a gross income of over £2,000 per annum—then the Survey's estimate of total holdings would be affected to the extent of £1,000 million.

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[1] See Table V, p. 95.

There are then, large discrepancies between the 1953 Survey estimates of liquid asset holdings by persons in private households and such outside estimates of total stocks of these assets as are available.

Now how do the 1953 Survey results compare with those of the 1952 Survey ? In Table XXII the Survey estimates for the two years are shown. In general the figures indicate a substantial decline in liquid asset holdings between the two years, in particular in holdings of National Savings Certificates, Defence Bonds and Joint Stock Bank Deposits. The comparison of the figures for the two years with outside sources indicates considerable irregularity in the relative movements.

In some cases, for example Defence Bonds and Post Office Savings Bank Deposits, the Survey figures and those from outside sources, are both moving downwards; but the Survey figures while moving in exactly the same proportion for Post Office Savings Bank deposits as the outside estimate, show a much more than proportionate drop in Defence Bonds. A rise in Trustee Savings Bank Deposits is indicated between the two years in both sources, but the Survey figures show a larger increase than the outside figures. The largest discrepancy among the items usually regarded as making up total National Savings (the first four items in Table XXII) appears in the holdings of National Savings Certificates, where the official figures show a small increase in holdings between the two years, compared with the Survey estimates of a large decrease.

In the three other types of liquid asset holdings where some comparison with outside sources is possible—Building Society and Co-operative Society Shares and Deposits and Joint-Stock Bank Deposits—the Survey estimates between the two years are moving in the opposite direction to the figures from other sources, and in both Building Society Shares and Deposits and Joint Stock Bank Deposits the discrepancies between the two sets of data are large.

An attempt can be made to offer possible explanations for the causes of discrepancy. It would seem that they can be summarised into two main groups—response rate and failure to obtain all the relevant information at the interviewing stage. The low response rate from the self-employed, managers and a sector of the retired, and thus to a large extent from the higher income groups, has already been discussed at some length in relation to the comparison of the 1953 Survey estimates with outside sources. There are several further relevant points which arise when the results of the two Surveys are compared. In 1953 there was a change in the sampling fraction designed to obtain a better coverage in the upper stratum, but this was counterbalanced by a substantial drop in response so that the coverage of those sectors of the population which are likely to have large holdings of liquid assets was in fact worse in the 1953 Survey than in 1952. A further point which would appear to support the general thesis of low response in the upper income groups as an important explanation of the relatively greater deficiency of estimates of liquid asset holdings in the 1953 Survey is that these upper income levels hold relatively more liquid assets in the form of National Savings Certificates and Joint Stock Bank deposits than in Post Office Savings Bank deposits, while the reverse is true among the lower income groups. Thus a low rate of response among the upper stratum would have a disproportionate effect on the Survey estimates of holdings of the former types of assets compared with the latter.

Certain hypotheses can be advanced about the failure to obtain all the relevant information at the interviewing stage, but they cannot provide any really satisfactory evidence for the deficiency of the Survey estimates. It may be that people of all classes deliberately understated their assets; or that people quite honestly underestimated how much they had in one form or another; or perhaps wives were unwilling to disclose all their savings in front of their husbands. It is, for instance, probably easier to obtain information from a member of a household about holdings in a Post Office Savings Bank account, when the account is regularly used and the bank book is readily available, than about some other types of asset. There may be a measure of truth in some or all of the explanations, but there is no evidence of their quantitative importance.

These comparisons of liquid asset holdings by income units in the 1953 Survey with outside sources and with the results from the 1952 Survey do clearly show serious deficiencies in the 1953 Survey. Nevertheless there is one interesting feature which indicates a degree of internal consistency. Each person was asked to provide information on the change which had occurred in his holdings of all eight types of liquid assets in the past year. Such information depends to a large extent on memory. The average ' memory change ' was a decrease of £15 per income unit. The average holding of all types of liquid asset per income unit was £225 in the 1952 Survey and £194 in 1953—a fall of £31. This fall has already been discussed; what is significant in the present context is that the memory change of what happened to liquid asset holdings between 1952 and 1953 in those income units which were successfully interviewed indicates a substantial movement in the same direction as the actual figures for liquid asset holdings from the two Surveys. This, of course, in no way explains the deficiencies, since, as we have seen, these apparently arose in the main from an unsatisfactory coverage of the higher income groups; but it does appear to show a reasonable degree of consistency in liquid asset holdings among those income groups which responded.

Miscellaneous comparisons with external statistics

A further assessment of the accuracy of the Survey results can be made on the basis of a comparison between the Survey figures of the total annual payments of life assurance premiums with figures published by the companies[1] and by the Registrar of Friendly Societies.[2] Of all income units in the sample, 70 per cent were paying some premiums for life assurance. The average annual premium paid amounted to £10, and we can thus estimate that the total of annual life assurance premiums paid by income units in private households was about £220 million. Figures published by the companies on ordinary life assurance and deferred annuities (excluding pension schemes) show that in 1952 the total premiums paid by persons in the United Kingdom totalled £148.5 million; a further £112 million was paid in premiums to industrial assurance companies and £26 million to collecting societies—£286.5 million in all.

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[1] *British Life Assurance Statistics 1951–1953* published by the Life Officer's Association and the Associated Scottish Life Offices.

[2] *Report of the Industrial Assurance Commissioner for the year 1952.* Summary Tables. H.M.S.O., 1953.

The Survey figures cover only about 90 per cent of the U.K. population. If we assume that those excluded from the Survey paid the same average annual premium as those covered, then the total of life assurance premiums on the basis of the Survey estimates is about £240 million. We have, therefore, a deficiency of some £45 million between the estimates based on the Survey and the outside source. Once again it would appear that a large part of the deficiency can be explained in terms of the low rate of response from the self-employed and managerial sectors. The Survey figures indicate that the annual premiums paid by these two occupational groups are about three times the average premium paid by all the income units, and thus any deficiencies in the coverage of these two occupations will have a disproportionate effect on the Survey figure of the size of average premium paid.

The Survey provides estimates of the number of certain types of durable goods owned by people living in private households. The data about ownership of three of these—motor-cars, motor-cycles and television sets—can be compared with estimates from other sources. The Survey estimate of the total number of cars is 2,174,000; if it is assumed that the same proportion of income units living in institutions as in private households own cars, then the estimate for Great Britain would be 2,415,000. The total number of cars registered in Great Britain on May 31st 1953 was 2,625,000.[1] The Survey did not collect information about cars used entirely for business purposes, which would include car dealers and private hire services, and this probably accounts for some of the difference between the two figures. The low response rate from the self-employed and managerial groups may have had some small effect in bringing about the underestimate, but it could not be very large. Although a higher proportion of income units in these two occupational groups do own cars than in any other group, the effect of the exclusion of cars covered by these numerically small groups on the total number of cars owned by all private households is much less than, say, in the case of liquid assets or savings, where the holdings are much more concentrated.

On the same date, the number of motor-cycles licensed (including tricycles and pedestrian-controlled vehicles) was 920,000;[1] the estimate derived from the Survey, assuming that the same proportion of those in institutions as in private households own motor-cycles, is 938,000. The Survey yields an estimate of 2,653,000 television sets owned by income units in private households; at the end of May 1953 the number of television licences current was

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[1] *Mechanically-propelled Road Vehicles, G.B. Return No. 162.* Ministry of Transport and Civil Aviation. H.M.S.O., 1953.

2,317,000.[1] The Survey figure is thus considerably above the number of licences issued. Judging by recent official activity, it appears that a number of television owners are considered not to have a licence, and if account could be taken of this the two figures might be brought into a closer agreement. On the other hand the Survey figures would be increased somewhat if sets owned by hospitals, clubs and other institutions were added. There is, however, strong evidence of internal consistency in the Survey figures of ownership of television sets. In 1952, the Survey results showed that 7.2 per cent of income units in private households owned sets. In 1953, 7.2 per cent of income units reported having purchased a set prior to the last year, thus providing an exact correspondence.

The increase between the two Surveys in the number of motor-cars, motor-cycles and television sets owned and the comparison with outside sources also provides further evidence of the consistency of the results. In all three cases the outside sources indicate substantial rises in the numbers of all three items owned, and the Survey figures reflect this growth in ownership, if not with absolute precision, at least to a degree which indicates a fair level of accuracy in this aspect of the results.

Clearly, the Savings Survey of 1953 has its strong and weak points. Although in some matters of technique and refinement of concepts it made distinct improvements over the Savings Survey of 1952, the drop in response rates has made certain results less satisfactory, and has imparted some bias. Fortunately, through an analysis of factors affecting response and an analysis of the relation between response biases and interesting economic variables, we can make qualitative and, in some cases, rough quantitative allowance for the deficiencies involved.

The present paper shows that the most serious problems occur in the treatment of monetary values highly concentrated in distribution. In these cases a few wealthy individuals, not well represented in the sample, dominate the results. This is especially troublesome in expanding sample means into national aggregates. Nevertheless, we have found a substantial degree of internal consistency and stability, where stability is expected, of various statistical measures. Distributions of demographic characteristics, with specific exceptions, are reasonably good as are measures of other variables not couched in monetary values such as ownership of motor-cars and television sets. The distributions of certain variables measured in monetary values compare well with other information, the size distribution of income being a relevant example. In general, statistics of variables more dispersed throughout the population than the highly concentrated amounts of wealth are among the better estimates. We feel that the most important uses of the data are to show the percentage distributions of variables, the shares of some types of variables accruing to population subgroups, and especially the internal relationships among variables.

[1] *Monthly Digest of Statistics*, December 1953.

APPENDIX

SUMMARY OF CHANGES IN SURVEY TECHNIQUES BETWEEN 1952 AND 1953

The methods used in the 1953 Survey were essentially the same as those used in the 1952 Survey, which have been described in detail in a previous article.[1] Accordingly, we shall confine ourselves in this appendix to an account of the few changes which did occur, whether in definitions used, sampling techniques, the form of questionnaire, or in editing procedure.

Changes in definition

There were three items included in the concept of *gross income* in 1953 which were not included in 1952. The first of these is the imputed rent on owner-occupied property; this was taken to be equal to the net annual value of the house for income tax purposes, although rateable value was occasionally used as a substitute where net annual value was not known. The second item is income from boarders; one quarter of the amount paid by the boarder was assumed to be equal to the actual net profit received by the landlord or landlady. The third item consists of the mortgage interest paid on property other than that in which the owner is living; in 1952 this was treated as a deduction to be made before arriving at income and not as an expense to be met out of income.

Savings are not affected by these changes in the definition of gross income because savings are not obtained as a residual in the Surveys.[2]

Changes in sampling technique and field work

The upper stratum[3] was sampled more intensively in 1953, the ratio of the sampling fractions in the two strata being increased from 5 : 1 to 8 : 1. Otherwise the sampling procedure was unchanged; indeed, the same first stage units (local authorities' rating areas) were used in both Surveys. The interviewers received a rather longer briefing in 1953, and the field work, interrupted in its later stages by the Coronation, was not completed as quickly as in 1952. The interviewers in 1952 received a bonus based on the number of successful interviews with self-employed persons. This was not given in 1953.

Changes in questionnaire

The form of the questionnaire used in 1953 was basically the same as in 1952. The schedule used in the 1952 Survey was reproduced in full in the article cited above.[4] The 1953 schedule was somewhat larger, partly because a series of additional questions were asked about consumers' net worth. No attempt was made to measure net worth in 1952. These questions related to the market value of any property or cars owned, the amount of any debts outstanding (including hire purchase obligations and mortgage principal outstanding), the value of any business owned and so on. Some of the answers given to these questions were inevitably subject to large margins of error.

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[1] BULLETIN, July and August 1954, pp. 197–244.

[2] One exception is that the business savings of self-employed persons are obtained as the difference between net profits and withdrawals, including taxation, out of those profits. However, even this component of savings is unaffected by the above changes in the concept of gross income.

[3] This stratum was changed in London only from rateable units of £30 and over to £40 and over in 1953.

[4] *Op. cit.*, pp. 214–220.

Apart from questions about net worth, additional questions were asked in 1953 about certain miscellaneous expenses incurred such as house repairs and decorations, education and contributions to dependent relatives. These questions enable a more complete picture of the income unit's financial position to be built up although they are not essential to some of the main purposes of the Survey. An additional opinion question was inserted in 1953. Respondents were asked to state in which of the previous five years they were best off. The answers obtained were not very satisfactory. A further question was also asked in 1953 about changes in the composition of the income unit during the two years preceding the interview.

Apart from these additional questions, certain of the questions asked in the 1952 Survey were substantially revised in the 1953 questionnaire.

1. The question relating to mortgages was framed in much greater detail in 1953 by asking a string of interlocking questions which afforded new information. By examining the internal consistency of the answers, it was possible to separate the interest paid and principal repaid with greater accuracy than in 1952. Moreover, informants were asked in 1953 to indicate the type of mortgage, *e.g.* whether or not it was taken out in conjunction with an endowment policy so that any possibility of the same policy appearing both under life insurance and under mortgage principal repaid was effectively eliminated.

2. In both questionnaires a separate section was devoted to self-employed business and professional people. Apart from the various outlets for savings which are available to all sections of the community, self-employed persons have an additional outlet in the form of profits retained in the business or practice, which we shall call ' business savings '. Business savings were estimated in both Surveys as a residual, *i.e.* the difference between profits and the total amount of funds taken out of the business profits to meet living and other expenses. In 1952 the self-employed were simply asked how much money they had taken out of the business for living expenses, but there are many other possible expenses, *e.g.* the purchase of durable goods, repairs, decorations and alterations, life insurance payments, holidays, etc., which might be paid for out of current profits and which might not be construed as ' living expenses ' if this expression is interpreted in a narrow sense. To the extent that such items were paid for out of profits and not included in the informants' figure of living expenses, business savings would be overestimated —in many cases by a substantial amount. An attempt was made to rectify this at the editing stage in the 1952 Survey by deducting from profits any exceptionally large expenses which must clearly have been met out of profits and could not have been included under the informant's stated living expenses. However, it still seems likely that many items may have slipped through so that business savings were correspondingly overestimated.

An attempt was therefore made in the 1953 Survey to improve the accuracy of the estimate of business savings by prompting the informant about certain miscellaneous expenses other than ' living expenses ' in a narrow sense, which might have been paid for separately out of profits. However, it is doubtful whether the list of items was sufficiently comprehensive even in 1953, so that business savings may again have been overestimated. Nevertheless, it is unlikely that any upward bias in this figure would be nearly so great as in 1952. An additional direct question was asked in 1953 about the amount of profits retained in the business, but this failed to provide an adequate check or to improve the accuracy of our estimate very much.

In the 1952 Survey a separate set of questions were devoted to farmers as distinct from other self-employed persons. In their case business savings were estimated as the net investment in buildings, machinery and stocks of goods —seed, fertiliser and so on. This method did not prove very successful and was dropped from the 1953 questionnaire, the business savings of farmers being estimated in the same way as for other self-employed persons in the second year.

3. The principal revisions in the income section related to unearned income; informants were specifically asked in 1953 to state dividends, interest etc. before any deduction of tax at source. It is possible that in 1952 some informants gave a net figure as they were not prompted on this point. In 1953, informants were also asked specifically about any maintenance income from scholarships, whereas this was subsumed under miscellaneous sources of income in 1952.

4. In the liquid assets section, informants were asked in 1953 to state the name of any savings bank in which they had deposits. It was found that some of these were in fact either trustee savings banks or ordinary commercial banks and the appropriate transfers were made at the editing stage.

5. In 1952 those people who held stocks and shares were simply asked their approximate market value within certain broad ranges. In 1953 they were asked for a specific figure, although the answers obtained were not necessarily more accurate than in the previous year.

Changes in editing procedure

Although there may be no change in criteria or definition, it is always possible that there may be differences in interpretation at the editing or coding stages of the Survey. For example, it is possible that some farm employees who would have been coded as skilled in the first year were coded as unskilled in the second year, but we believe that such differences in treatment were rare. However, there is inevitably an element of judgment entering into the interpretation of some of the answers *e.g.* in disentangling mortgage principal from interest or in estimating business savings, so that it is impossible to eliminate subjective factors altogether.

Two mistakes were made in calculating tax liability in the 1952 Survey. The first was that certain government transfers—sickness, unemployment and maternity benefits—were treated as taxable earned income whereas they are in fact tax free. This error cannot have been of any consequence. The second mistake was that the various allowances—earned income allowance, children's allowances etc.—which can be set against income for purposes of income tax were also deducted from income before calculating surtax liability, whereas none of these allowances apply when calculating surtax. In calculating tax liability in 1953 these errors were avoided.

Where the informant gave satisfactory information on income but refused to divulge the amount of his or her holdings of liquid assets, an imputed figure was inserted at the editing stage in the 1953 Survey. This figure was equal to the mean holding given by the 1952 Survey of the particular type of liquid asset (or, if necessary, of total liquid assets) for the age and gross income group of the head of the income unit. This type of procedure, which is one of the recognised methods of dealing with non-response, could not have been adopted in the 1952 Survey as the requisite means were not available at the editing stage, the 1952 Survey being the first of its kind. After completing the tabulations for the 1952 Survey, allowance was made for those income units with 'not ascertained' liquid assets by assuming that their average holding was equal to the average holding of those income units which did in fact hold some liquid assets since it was considered unlikely that people who refused would have no liquid assets. The course adopted in 1953 has the advantage that more information is utilised, since by imputing on a sub-group basis rather than in aggregate, other factors known to be associated with liquid asset holdings could be taken into account. It is, moreover, likely to lead to less bias in the estimated overall mean for the reasons just stated and because it does not assume that all those who refuse in fact hold some liquid assets.

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